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# WEED ABSTRACTS

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## NOTES FOR READERS OF WEED ABSTRACTS

Weed Abstracts endeavours to provide a comprehensive coverage of the world's literature on weeds, weed control and closely allied subjects. To this end over 370 journals and nearly 100 annual reports are regularly searched. Other journals, reports, bulletins, etc. are abstracted as they are seen. Additional coverage is obtained through agreements with other abstracting organisations.

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As far as possible journal abbreviations given in the World List of Scientific Periodicals are used. Holding libraries in Oxford and elsewhere are also taken from the World List, e.g. O.BO. = Botany Department, Oxford. Numbers at the end of abstracts, e.g. 75(492) are for internal use only.

When a paper is by more than one author, only the address of the first author is given.

Where an abstract is taken from an abstracting journal the acknowledgement follows the abstract, e.g. Herb.Abstr., 2,163. Where it is only quoted in part the acknowledgement is preceded by the word "from", e.g. From Biol.Abstr., 2,294.

The Information Section is always pleased to receive comments and suggestions for the improvement of Weed Abstracts.

* An asterisk before the author's name indicates that only the title of the paper has been seen.

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|---|---|---|---|---|---|
| ac | - acre(s) | in. | - inch(es) | p.s.i. | - pounds per square in. |
| a.e. | - acid equivalent | kg | - kilogram(s) | v/v | - volume/volume |
| a.i. | - active ingredient | l | - litre(s) | w/v | - weight/volume |
| cm | - centimetre(s) | lb | - pound(s) | w/w | - weight/weight |
| d.b.h. | - diameter at breast height | m | - metre(s) | > | - greater than |
| ft | - foot (feet) | ml | - millilitre(s) | < | - less than |
| g | - gram(s) | oz | - ounce(s) | # | - pounds per acre |
| gal | - gallon(s) | post-em. | - post-emergence | ± | - with or without |
| ha | - hectare(s) | pre-em. | - pre-emergence | | |
| | | p.p.m. | - parts per million | | |

Language abbreviations: an initial capital denotes the language of the article, a small letter that of the summary: - Dan. - Danish, Du. - Dutch, E. - English, F. - French, G. - German, It. - Italian, Jap. - Japanese, Nor. - Norwegian, Russ. - Russian, Span. - Spanish, Sw. - Swedish.

See also 948,951,963,974,984,1004,1006,1007,1009,1010,1012, 1020,1021,1023,1029,1031,1042,1047,1054,1056,1103,1104,1105.

926. UNITED STATES. (Rohm & Haas Co., Washington Sq.,Philadelphia 6,Pa,U.S.A.) Experimental herbicide FW-734. Tech. Data Sheets Rohm & Haas Co., 1960, pp.4.
FW 734 is a 25% emulsion concentrate of N-3,4-dichlorophenylpropionamide. The LD 50 to rats is ca. 1450 mg/kg; there is virtually no effect on the skin. It is mainly effective against seedling broad-leaved and grass weeds. Limited translocation occurs. It will control Amaranthus spp., Chenopodium album, Ambrosia artemisiifolia, Portulaca oleracea, Polygonum spp., Plantago major, Anagallis arvensis, Cerastium spp., Stellaria spp., Raphanus sativus, Brassica campestris, Medicago hispida, Capsella bursa-pastoris, Digitaria ischaemum and D. sanguinalis, Setaria spp., Avena fatua, Eragrostis diffusa and seedling Cynodon dactylon. If applied early 0.5 # may suffice, as plants get older up to 6 # may be necessary. Perennials and biennials, particularly if established, are probably unaffected. Potatoes, rice and turf grasses, (Kentucky bluegrass, Merion bluegrass, Colonial bent, Creeping bent, Chewings fescue and rye will tolerate 10 #) are tolerant of overall sprays and tomatoes at 6 weeks after transplanting (but not before). Some tolerance has been shown by flax, wheat, oats, barley, rye and strawberries but not by sweet corn, maize, snap beans, peas, soybeans, table and sugar beets, cotton, sorghum, Sudan grass, spinach, carrots, cucumber, squash, rape, lucerne and red clover. - L.K.
[O.W.]

927. NEURURER, H. (Bundesanst.PflSch., Vienna,Austria). Lässt sich die Hackarbeit in Mais durch chemische Unkrautbekämpfungsmittel ersetzen? [Can hoeing in maize be replaced by chemical weed control?] Pflanzenarzt, 1960, 13,20-1,34-5, (G.), figs.3,tabs.1.
In 3 years' trials simazine was applied to maize pre-em. In 2 years when it was very dry and the soil crusted the maize did not grow as well on the sprayed as on the hoed plots (although weed control was good). In the third year where it was moister, weed control was excellent and the soil remained in good tilth,the sprayed plots outyielded hoed plots. - L.K.
[48(436)]

928. * FLEETWOOD, R., MURPHY, B. and FLETCHALL, O.H. Pre-emergence sprays for corn. Ext.Folder Mo.agric.Coll., 1959, 63,pp.6.
2,4-D.

929. HOIZ, W. (PflSchAmt.,Oldenburg,Germany). Möglichkeiten der chemischen Unkrautbekämpfung. [Possibilities of chemical weed control.] LandwBl.Weser-Ems, 1960, (7),pp.2.
Includes the following information: (1) simazine may be applied to cereals at the 6-leaf stage for the control of blackgrass [Alopecurus myosuroides]; (2) a new phenol ester (Aretit) appears promising for similar uses as dinoseb and DNC; (3) in carrots a mixture of chlorpropham + monuron is approved; (4) Alipur [butinolchlorophenylcarbamate + cyclooctyldimethylurea] is recommended by the manufacturers for weed control in sugar beet, beans, peas, parsley, leeks, scorzonera, chives, spinach, onion setts and asparagus; (5) chlorpropham has been found very effective against blackgrass in dormant clover and lucerne; (6) simazine + amitrol (Domatol 371) has given promising results in fruit trees and strawberries. - L.K.
[221(43)]

930. BHARDWAJ, R.B.L. and VERMA, R.D. (Ind.Agric.Res.Inst.,New Delhi,India). The chemical control of weeds in rice fields. Ind.J.Agron., 1959, 4,(2),123-9, bibl.58.
A review of the use of herbicides for weed control in rice. - J.W.B.
[O.RE.]

931. CANADA. Flax. [4 Reports] Res.Rep. W.Sect.Nat.Weed Comm.Canada, 1959, 88-90, tabs.1.
Plots treated with MCPA 0.5 + dalapon 0.75 # (1) yielded more than those treated with MCPA 0.5 + TCA 3 or 6 # or + dalapon 1.5 #; (1) yielded nearly as much as the weeded control. Applying TCA and dalapon in 15 gal/ac was less injurious than 5 gal. When treated with barbane at the 3 or 8 true leaf stages Redwing flax proved to be most resistant, Redwood most susceptible and Rocket intermediate. All were more susceptible at the later stage of growth and only Redwing tolerated even 0.5 # without a reduction in yield. L.K.
[O.W.]

932. CANADA. Soybeans. Whitebeans. Tobacco. [15 Reports] Res.Rep.E.Sect. Nat.Weed Comm.Canada, 1959, 24-37, tabs.14.

Soybeans. Pre-planting promising results were given by neburon (granular) 4 #, while EPTC 6 # was injurious. Pre-em. promise was shown by neburon (granular) 4 #, amiben 3-6 #, dinoseb 3-4.5 #, dinoseb 3 + CDAA 3 #, methoxypropazine 0.5-2 #, trietazine 1-2 #, ipazine 1-2 # and methoxypropazine 0.75 #, unsatisfactory results were given by diquat 1-2 #, EPTC 6 #, Alanap-3 [NPA] 2-4 #, diquat 1-2 # and Urab [fenuron-trichloroacetate] (granular) 1.5-3 #. At emergence good results were given by Alanap-3 3 #, CDAA 8 #, dinoseb (granular) 3 #, CDEC 8 # and 3Y9 4 #. At the cotyledon to first true leaf stage methoxypropazine raised yields but defoliated the plants. Dinoseb gave better results at the crook to cotyledon stages than at the 1 true leaf stage. At the 1-2 true leaf stage MCPB 1 # tended to cause injury and 2,4-DB to cause severe injury. Rows sown 24 x 2 in. just outyielded those sown 7 x 3 in. or 36 x 1 in. and would make for economical band treatment. Methoxypropazine 1 # gave 95% control of ragweed [Ambrosia artemisiifolia] 1.5 # 100% control of lady's thumb [Polygonum persicaria], 1.5 # 60-90% control of Hibiscus trionum, 1 # 90% control of foxtail [Setaria spp.]; methoxyipazine 1 # gave 95% control of foxtail.

Snapbeans. Pre-planting EPTC 2-8 # gave good results and good control of red root pigweed [Amaranthus retroflexus]. Pre-em. promising results were given by methoxypropazine 2 # and trietazine 2 #. At the crook and cotyledon stage dinoseb 1.5 # showed promise; at the first true leaf stage trietazine 2 # was injurious. MCPB and 2,4-DB were injurious post-em.

Tobacco. Pre-planting promise was shown by simazine 2 #, trietazine 1 # and EPTC 5 #. Pre-em. promising results were given by amiben 5 #, neburon (granular) 3 #, simazine (granular) 2 #, injury was caused by Urab 2 #, EPTC 5 #, simazine (spray) 2 # and trietazine 2 #. Post-em. injury derived from FW-734 [3,4-dichlorophenylpropionamide] 2 #, Solan [N-(3-chloro-4-methylphenyl)-2-methylpentanamide] 4 # and Karsil [N-(3,4-dichlorophenyl)-2-methylpentanamide] 4 # while trietazine gave good control of lambs quarters [Chenopodium album], lady's thumb [Polygonum persicaria], wild buckwheat [P. convolvulus] but poor control of annual grasses. - L.K.

[O.W.]

933. ROBERTSON, I.M. (N.I.A.E., Howden, Mid-Calder, Midlothian, Scotland). The use of herbicidal sprays on the potato crop. J.agric.Engng Res., 1960, 5, (1), 117.

When applied when the first few leaves of Kerr's Pink potatoes appeared above the ground dinoseb 6 + TCA 10 # gave season-long weed control and the treated plots gave very similar yields to those cultivated. A mixture of MCPA and TCA was tried but this gave poor weed control. - L.K.

[O.W.]

934. CANADA. Potatoes. [5 Reports] Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 2-8.

When 85% emerged, dinoseb 3-6 + dalapon 10 #, DNOC (in oil) 2 and 4 #, trietazine 2-4 # and CDEC 2 and 4 # reduced yields while neburon 2-6 #, dinoseb 0.9 # and lower rates of DNOC and CDEC did not. Polygonum persicaria, Echinochloa crus galli, Galeopsis tetrahit and Chenopodium album were well controlled by dinoseb + dalapon, neburon 4 # and trietazine.

Pre-em. promising results were given by dalapon < 6 #, diuron < 2.3 #, dinoseb (amine) 8.6 #, simazine 2 #, trietazine 2 #, neburon 3.7 # and ipazine 2 #.

At emergence promising results were given by dinoseb (amine) 3 #, 2,4-D 0.5 #, dalapon 4 + dinoseb 3 #, dalapon 4 + 2,4-D 0.5 # and CDAA 4 + 2,4-D 0.5 #. Yields less than the weed free control were given by simazine 1 and 2 #, trietazine 1 and 2 # and dalapon 4 + 2,4-D 0.5 # - trietazine 2 # was best and higher rates giving better weed control may be even better.

Katahdin, Keswick and Netted Gem sprayed the previous year with dalapon 10 # showed non-significant reductions in yield the following year. There was no effect on starch content or number of small potatoes. Sunburnt potatoes were halved and number of rotten potatoes doubled. - L.K.

[O.W.]

935. CANADA. Turnips, mangels and sugar beets. [23 Reports] Res.Rep.E. Sect.Nat.Weed Comm.Canada, 1959, 38-54, tabs.11.

Turnips. EPTC 7.2 # incorporated before sowing caused no injury; 4.5 # gave satisfactory control of Amaranthus retroflexus, Ambrosia artemisiifolia and Setaria glauca. The crop proved very sensitive to amiben pre-sowing.

Mangels (swedes). Pre-planting promising

results were given by EPTC 3 # incorporated, *amitrol 4 #, * CDAA 4.6 + 2,3,6-TBA 1 #, *CDAA 4.6 + MCPA 0.5 #, *MCPA 0.5 #, *MCPB 1 #, *dalapon 4 + MCPA 0.5 #, *Aero cyanamid 100 # (N), MCPA 0.5 + TCA 6-12 # or + amitrol 6 #, *dinoseb 2 #, 2,4-D 6 oz + TCA 9 or 12 # or + amitrol 6 #, dalapon ca. 10-30 #, amitrol ca. 3-9 #, dalapon 10 + 2,4-D (ester) 0.5 #, 2,4-D (ester) 1 #, PCP 30 #, PCP 20 + 2,4-D (ester) 0.5 #, PCP 20 + dalapon 10 #, 2,3,6-TBA 1-3 # and CDEC. Injury was caused by *Alanap-3 [NPA] 4 # and *chlorpropham 4 #, monuron 1 #, diuron 1 #, □ amitrol-T [amitrol + ammonium thiocyanate] 3 #, □ fenac 3 #, □ amiben 3 #, □ diquat 1 # + atrazine 1 #, +methoxypropazine 1 # while variable results were given by +simazine, and +trietazine. (* = no control couchgrass [Agropyron repens] or wild buckwheat [Polygonum convolvulus], □ = good control Amaranthus retroflexus, Sonchus arvensis and Echinochloa crusgalli, + = good control Chenopodium album, Stellaria media, Echinochloa crusgalli, Senecio vulgaris and Amaranthus retroflexus). O-(2,4-dichlorophenyl)-O-methylisopropylphosphoroaminothioate [Zytron] 10 # had no effect on crop or weeds. Some reduction in germination was caused by dinoseb (granular) 4 # and 2,4-D (granular) 2 #. 1 # monuron or diuron gave good control of stinkweed [Thlaspi arvense] and hempnettle [Galeopsis tetrahit] and fair to good control of couchgrass, EPTC 3 # gave moderate control of all 3 spp. 2,3,6-TBA 1 # gave fair to good control of stinkweed (1), none of hempnettle (2) or couchgrass (3); trietazine 2 # and methoxypropazine 2 # gave good control of (1 and 2) but poor control of (3). Pre-em. EPTC 2,3 # gave no crop injury or weed control; trietazine and methoxypropazine both 2-3 # were very injurious. Post-em. promising results were given by amiben 2 # and 6 days before, or 14 days after thinning by Niagara 4562 [Karsil, N-(3,4-dichlorophenyl)-2-methylpentanamide] 2-3 #.

Sugar beet. Pre-planting EPTC 2 # incorporated caused no injury and gave good weed control. Incorporation with a disc harrow or spring tooth harrow resulted in better control of broadleaf weeds, but not of grasses, than incorporation with a spike harrow. Promising results were given by endothal 6 #. Crop injury was caused by incorporating monuron 0.5 #, diuron 0.5 #, fenuron-trichloroacetate 1 #, chlorpropham 2 + CDEC 4 # but not by CDEC 6 and 8 # or α-chloro-N-ethyl-N-phenylacetamide 4-8 # - similar results were given by pre-em. applications. Pre-em. promising results were given by EPTC 6 + TCA 10 #, endothal 2.5 + EPTC 3 #; little or no injury (but poorer weed control) was given by endothal 2.5 + CDAA 4 # or + CP 1815 [MCPA + 2,3,6-TBA] 6 oz. or + chlorpropham, DCU 10 + EPTC 6 #. Promise was also shown by endothal 3-12 # and dalapon 5-10 #. Variable results were given by CDEC 8-12 # and EPTC 6-8 # while injury was caused by Urab [fenuron-trichloroacetate], hexachloroacetone 104 oz, monuron 0.5 #, diuron 0.5 # and α-chloro-N-ethyl-N-phenylacetamide 3-12 #. L.K. [O.W.]

936. CANADA. Other special crops. [6 Reports] Res.Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 113-6.

Rapeseed. 20-30% injury was given by propham 6 # and chlorpropham 8 # and 70% by Urab [fenuron-trichloroacetate] 2.2 # all incorporated the day before sowing. Pre-em. chlorazine [2-chloro-4,6-bis(diethylamino)-s-triazine] 6 # and 2,6-dichlorobenzonitrile 0.5 and 1 # outyielded the handweeded control although weed control was poor; Randox [CDAA] 4 and 8 #, EPTC 4 and 8 #, dalapon 3 and 6 # and TCA 4 and 8 # which gave 40-64% weed control all yielded less than the control. Post-em. TCA gave the best results; the other compounds were dalapon, Randox, TBA and Diax [2,4-D + citric acid] - again yields were not correlated with weed control. TCA 4 # and dalapon 0.75 and 1.5 # gave better control of green foxtail [Setaria viridis] 3-4 leaf stage in rape 2-4 leaf stage than pre-sowing incorporated applications of chlorpropham 4 and 8 #; none of the 3 compounds appeared to injure the crop.

Sunflowers. As incorporated pre-planting treatments CP 15336 [Avadex - 2,3-dichloroallyl diisopropylthiolcarbamate] 2-6 # gave slightly poorer control of wild oats [Avena fatua] and poorer control of green foxtail [Setaria viridis] and broad leaved weeds than EPTC 2-6 #. As incorporated pre-em. treatments no serious injury or set-back was caused by 4 and 8 # Randox-T [CDAA + trichlorobenzylchloride], 3,4-dimethylbenzophenone, or Avadex, 3 and 6 # of 2,6-dichlorobenzonitrile or EPTC or 10 and 20 # tetrachlorobenzene; Avadex controlled wild oats but not other weeds and EPTC controlled green foxtail but not others, the remainder were poor on all weeds (the weeds were wild oats, green foxtail, pigweeds [Amaranthus spp.], wild buckwheat [Polygonum convolvulus] and stinkweed [Thlaspi arvense].

Soybeans. Pre-em. amiben and Randox gave good weed control with little crop stand

reduction; little effect on stand or weeds was given by chlorazine, atrazine, trietazine, Dow Premerge [dinoseb] or 2,6-dichlorobenzonitrile; chlorpropham caused moderate injury to crop and weeds. When applied at the first or third true leaf stages, TCA 3-7 #, dalapon 0.5-1.5 # and Premerge 2-6 # were highly injurious, Randox caused only temporary injury. - L.K. [O.W.]

937. CANADA. Grasses and legume crops. Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 55-62.
Includes the information that seedling ladino clover yield was increased when treated with 2,4-DB (butyl ester) and (sodium) 1.5 # and MCPB (sodium) 1.5 #, and decreased by all rates of MCPA and treatments containing dalapon.
2,4-DB (butyl ester) 1.5 # caused stunting of hemp nettle [Galeopsis tetrahit]; 2,4-DB (butyl ester) and (sodium) 1.5 # and MCPA (amine) 0.375 # gave good control of nettles [Urtica spp.]. - J.W.B. [O.W.]

938. CROWDER, L.V., LOTERO, J. and SALDARRIAGA, A. Aplicacion de herbicidas a las gramineas y leguminosas I. [Application of herbicides to grasses and legumes I.] Agric.Trop., 1959, 15,(3),157-63, (Span.), tabs.2,bibl.1.
Dinoseb 4 kg/ha applied pre-em. did not affect germination of legumes, Stizolobium deeringianum, Dolichos lablab, and Cajanus cajanus, nor growth of the following grasses propagated vegatatively: Digitaria decumbens, Panicum purpurascens, Panicum maximum, Pennisetum purpureum, Axonopus scoparius, and Tripsacum laxum. Weeds were controlled for 40 days except Cynodon dactylon, Cyperus terax and Eleusine indica. A mixture of dinoseb 50% + dinosam 10% at 3 kg/ha also caused no injury but was less effectual against weeds. Post-em. applications of dinoseb 3 kg/ha made either 19 days after planting when legumes had 1 trifoliate leaf and grasses 2-3 leaves, or 60 days after planting following cutting or no cutting, injured the legumes and also A. scoparius and T. laxum. However, in another trial 4 kg/ha applied 60 days after planting following cutting and hand weeding caused no injury to C. cajanus or to grasses but injured S. deeringianum and D. lablab. - D.M.L.S.

939. JOHNSTON, A. 2,4-D ester increases palatability of grass. Forage Notes, 1959, 5,(1),28-9.
Utilization counts after grazing by cattle of plots sprayed a few months previously with 2,4-DB 40 #, Brushkill [2,4-D + 2,4,5-T] 4 and 40 #, concentrated Borascu, Benzac 354 [chlorinated benzoics] 40 #, and 2,4-D (ester) 40 # indicated that 2,4-D adds appreciably to the palatability of the grasses. - D.M.L.S. [GRS]

940. JONES, G.E. and ANDERSON, G.W. Your guide to chemical weed control in field crops. Publ.Ontario Dep.Agric., 1960, 75A, pp.10. [228(71)]

Noted

941N. WIGGANS, S.C. and BUCHELE, W.F. (State Univ.,Oklahoma,U.S.A.) The use of desiccants permit direct combining of red clover seed. Down to Earth, 1960, 15,(4), 17-18, figs.2,tabs.2,bibl.7.
With DNOC. - D.M.L.S. [O.W.]

## HORTICULTURAL, ORNAMENTAL AND PLANTATION CROPS

See also 926,929,940,995,1013, 1015,1035.

942. CANADA. Horticultural crops (a) Vegetables. Res.Rep.E.Sect.Nat.Weed Comm. Canada, 1959, 63-82.
Good to excellent weed control without serious crop damage was given by:- Niagra 4562 [Karsil - N-(3,4-dichlorophenyl)-2-methylpentanamide] 4-6 # post-em. in carrots and 3 # post-em. in celery; Niagra 4556 [N-(3,4-dichlorophenyl)methacrylamide] 4 # post-em. in carrots; Niagra 4512 [Solan (N-(3-chloro-4-methylphenyl)-2-methylpentanamide)] 6 # in tomatoes after transplanting; chlorpropham 4-8 # pre-em., Heptazine [ipazine] 4 # post-em., Solan 2-4 # post-em., propazine 2 # pre-em. or Varsol [oil] 80 gal/ac post-em. in carrots; ipazine 2 # pre-em. or 4 # post-em. in carrots or 2 # pre-em. in peas; oil 40 gal/ac post-em. in carrots or celery; CDEC 5-7 # pre-em. in lettuce, or 6 # in tomatoes after planting out or 10 # pre-em. in cabbage and cauliflower; EPTC 8 # pre-planting or pre-em. in beets, 4-6 # in tomatoes after planting out or 5 # (gran-

ular) or 6 # (liquid) pre-planting in snapbeans; endothal 12 # pre-planting in beet; amiben 3-6 # pre-em. in cabbage and cauliflower, 4 # pre-em. in peas, 4-6 # in tomatoes after transplanting; CDAA 5-10 # pre-em. in cabbage and cauliflower, 4 # pre-em. in onions; dinoseb (granular) 4 # or (amine) 2.6-4 # at emergence, or 2 # at second node stage in peas, Zytron (O-(2,4-dichlorophenyl)-O-methyl isopropylphosphoroamidothioate) 15 # pre-em., MCPB + MCPA 15:1 1.5 # at 5 node stage or trietazine 2 # pre-em. in peas, (where rainfall was heavy, trietazine damaged peas); dinoseb 3 # + CDEC or CDAA 3-6 # post-em. in snapbeans; simazine 2 # pre-em. in sweet corn or 2 # in tomatoes after transplanting; atrazine 2 # pre- or post-em. or fenac 2 # pre-em. in sweet corn.

The following gave good weed control but damaged crops:- simazine 1 # pre-em. + 1 # post-em. in onions; ipazine 2 # in peas at the second node stage; trietazine 2-4 # pre-em. in snapbeans; chlorpropham 4-6 # or dinoseb 4-6 # in tomatoes after transplanting; propazine 4 # pre-em. in carrots; EPTC 6 # pre-planting in carrots (delayed emergence) or 6 # pre-planting in beets; NPA (granular) 20 # pre-em. in beets (moderate weed control); CDEC 5 # pre-em. in lettuce.

Poor weed control and crop damage resulted from:- chloro-N-ethyl-N-phenylacetamide 5 # pre-em. in cabbage and cauliflower; Karsil 4 # or Solan 4 # pre-em. or Embutox [2,4-DB] 3.75 # at second node stage in peas; dinoseb 4-6 # at lay-by in tomatoes. The susceptibility of 4 pea varieties 5 in. high to 4-MCPB (sodium) 1.5-3 # at 80°F < 90°F.

Neither weeds nor crops were susceptible to:- EPTC 6 # pre-em. in carrots (delayed emergence), 12 # pre-planting in cabbage and cauliflower, 6 # pre-em. in snapbeans, or 8 # in tomatoes at lay-by; amiben 4 # pre-em. in snapbeans or carrots or 8 # in tomatoes at lay-by; dinoseb 6 # pre-em. in snapbeans or 3 # post-em. in sweet corn; CDEC (granular) 5 # pre-planting in cabbage and cauliflower; dalapon 6 # pre-em. or Imp. Oil NSX 200 5A 40 gal/ac pre-em. in beets; 2,4-D 0.5 # or amitrol 1 # post-em. in sweet corn; neburon 4-6 # at planting or 4 # at lay-by, Solan 6 # (9-11 leaf stage) or 3,4-dichlorophenylpropionamide 2 # after transplanting in tomatoes; DMTT 37 # pre-planting in lettuce and selective oil 40 gal/ac post-em. in carrots. Esso Weed Killer 500 19 gal/ac or liquid cyanamid 5 gal/ac post-em. gave good weed control in onions; yields were not recorded. - M.E.L. [O.W.]

943. CANADA. Horticultural crops (a) Vegetables and sugar beets. Res.Rep.W.Sect. Nat.Weed Comm.Canada, 1959, 99-104.

Good or fairly good weed control without yield reduction was given by:- CDEC 3-6 # pre-em. in Detroit Dark Red beet and 6 # in 45 gal post-planting in cauliflower and cabbage; amiben 4 # pre-planting in tomatoes; Zytron (O-(2,4-dichlorophenyl)-O-methyl isopropylphosphoroamidothioate) 10 # in 45 gal post-planting in cauliflower, cabbage and tomatoes, and 15 # pre-em. in sweet corn (grasses not controlled); EPTC 4 # pre-planting in tomatoes or beets; simazine or atrazine 3 # ± dinoseb 3 # pre-em., dinoseb 3 # pre-em. or monuron 2 # pre-em. in sweet corn; TCA 3 # + dinoseb 3 # or dalapon 1.5 # + dinoseb 1 # pre-em. in potatoes; amitrol 8 # ± dalapon 20 # post-em. in asparagus (did not control redroot pigweed [Amaranthus retroflexus]. The following treatments controlled weeds but damaged crops:- amiben 4 # pre-planting in beets, cauliflower and cabbage; 3Y9 4 # pre-planting in cauliflower or cabbage; EPTC 4 # pre-planting caused some distortion in cabbage and 2,4-DES pre-planting in tomatoes. Poor weed control with no crop damage resulted from:- CDEC 6 # post-planting in tomatoes; TCA 6 # pre-em., dalapon 2 # pre-em., neburon 2 # pre-em., diuron 2 # pre-em. and trietazine 4 # pre-em. in potatoes. TBA 12 # seriously distorted asparagus. The susceptibility of snapbean varieties at 4-5 nodal stage to MCPB 1 # or 1.5 # was Blue Lake (severely damaged) > Unrivalled Wax > Topnotch > Stringless Green Pod. The (a) % control wild oats [Avena fatua], (b) % control green foxtail [Setaria viridis], (c) yield of sugar beet in tons/ac following pre-planting sprays in 20 gal/ac was EPTC 4 # (a) 100, (b) 100, (c) 14.5; CP 15336 (2,3-dichloroallyldiisopropylthiolcarbamate) 2 # (a) 100, (b) 0, (c) 9.0; endothal 6 # (a) 0, (b) 0, (c) 9.5 and for dalapon 4 # in 10 gal, 3-5 leaf stage of beet (a) 95, (b) 100, (c) 9.5. For the untreated plot (c) 6.5 and for handweeded plot (c) 19.2. M.E.L. [O.W.]

944. CANADA. Field and canning peas. [3 Reports] Res.Rep.W.Sect.Nat.Weed Comm. Canada, 1959, 91-3, tabs.2.

In a pre-em. test on Arthur peas, the handweeded check was outyielded by 3,4-dimethylbenzophenone 6 and 12 #, α-chloro-N-phenylacetamide 4 and 8 #, CP 15336 [2,3-dichloroallyl diisopropylthiolcarbamate] 4 and 8 #, 2,6-dichlorobenzonitrile 1 # (but not by 0.5 #), EPTC 4 # (but not by 8 #), chlorazine [2-chloro-4,6-bis(diethylamino)-s-triazine] 4 and 8 # and trietazine 2 and 4 #; yield did

not appear to be correlated with weed control. In post-em. tests in the same variety and where weeds were few, all treatments yielded less than the unweeded control; they were: MCPA (amine) 3-7 oz/ac, MCPA (sodium) 4-16 oz/ac, MCPB (amine) 10-20 oz/ac, MCPB (sodium) 16-24 oz/ac, Dow Premerge [dinoseb], TCA 3-8 #, TCA 3 lb + MCPA 3 oz + dinoseb, 2,4-DB (ester) 1-1.5 #, 2,4-DB (sodium) 1-1.5 #, MCPB (ester) 1-1.5 #, MCPA (sodium) 6 oz + TCA 3 or 6 #, MCPB (sodium) 1.5 + TCA 3 or 6 #. In the pre-em. test 70% or more control of green foxtail [Setaria viridis] was given only by α-chloro-N-phenylacetamide 8 #, CP 15336 8 # and EPTC 4 #. In a post-em. test on different varieties of peas a 15:1 MCPB/MCPA mixture was applied at 0.75-1.5 #; 1.5 # had no effect on var. Wando, Early Perfection 326 or 70; 18 oz had little or no effect on Perfection 327, Perfected Freezer or B.C. Blues; 12 oz had no effect on Early Resistant while 18 oz delayed the growth of Hyalite. - L.K. [O.W.]

945. CITERRI, R. Prime prove di diserbo con CDEC. [First tests of weed control with CDEC.] Notiz.Mal.Piante, 1959, 49/50, 29-30, (It.e.), bibl.3.

CDEC 10 kg/ha applied pre-em. to lettuce and spinach caused only negligible temporary injury and gave good control of Portulaca oleracea and Digitaria sanguinalis, but was ineffectual against Matricaria chamomilla, Artemisia campestris, Stellaria media, Convolvulus sepium, Cynodon dactylon, and Allium sp. 5 kg/ha was ineffectual. - D.M.L.S. [62(45)]

946. WRIGHT, W.J. There is still much to learn about the weedkillers. Comm.Grower, 1960, (3353), 885, figs.2.

In demonstration plots at Newent, Glos. in 1958 and 1959, excellent results were obtained with dinoseb (amine) 4 # as a pre-em. spray on runner beans. On late-sown broad beans 3 # gave good weed control when applied at the 2-4 leaf stage. When timed correctly, contact pre-em. sprays of PCP and cresylic acids gave good results on a number of vegetable crops. Chlorpropham, fenuron and mixtures of these were also included in the tests. - H.A.Roberts. [NVRS]

947. STANEK, G. (Inst.Landw.,Dtsch.Akad. Landw.,Berlin,Germany). Die Anwendung des Unkrautstriegels und der Ackerbürste im Pflanzengemüsebau. [The use of the weed harrow and finger weeder in vegetable crops.] Dtsch.Gartenbau, 1960, (1/2),pp.7, (G.), figs.8,tabs.5,bibl.6.

One year's experiments on the use of a finger weeder (Ackerbürste) and a harrow in transplanted cauliflower, Brussels sprouts, kale and cabbage have shown that the crop may be harrowed along the rows about a fortnight after planting out and across the rows about 3-4 weeks after planting out. Later harrowings both along and across the rows may be made if necessary. If the plants are well rooted little loss (<5%) is to be expected and harrowing in the afternoon when the plants are flaccid is advisable. Celery and leeks appear to be particularly resistant to harrowing. The finger weeder has advantages over the harrow:- it is adjustable for depth, it is more effective on hard ground, weeds may be treated later than the cotyledon stage, it is effective against weeds in the rows and it may be used in taller crops. The economics of the treatments are discussed. - L.K. [216(43)]

948. TURNER, G.O. (Dow Chem.Co.,Midland, Michigan,U.S.A.) Trizone ..... a new triple action soil fumigant. Down to Earth, 1960, 15,(4),2-5,24, figs.7,tabs.5,bibl.20.

Trizone is composed of: methyl bromide 61%, chloropicrin 31%, and propargyl bromide 8%. Its vapour pressure (absolute) at 30°C is 28 p.s.i., and it has no flash or fire point. It is recommended at 140-200 # for fungus, nematode and weed control for vegetable, tobacco, ornamental and conifer seedbeds and for planting sites for ornamentals. It should be injected at a depth of 6 in. after ploughing to at least 10 in. or subsoiling. Methods of application and of covering treated soil (tarping) are described. With a soil temperature of 50°F, 2 days tarping is enough; lower temperatures require 3-4 days. After injection, a delay in tarping of 20 minutes has not seriously reduced effectiveness. Following tarping, the soil should be deeply cultivated. Crops can usually be seeded 3-4 days after removing the cover and transplants planted 2-3 weeks after, or longer if rains or temperatures below 60°F occur. Trizone 140 # has given as good weed control as 436 # of a mixture of 98% methyl bromide and 2% chloropicrin.- D.M.L.S. [O.W.]

949. NETHERLANDS. De gevaren van chemische onkruidbestrijding in de nabijheid van peen. [The dangers of chemical weed control near carrots.] Weekblad voor Bloembollencultuur, 1959, 70,(22),381,(Du.)

A photograph shows injury to carrots after spraying neighbouring plots with growth regulators. - From Landbouwdocumentatie, 1960, 1722. - L.K.

950. KIDNER, A.W. M.C.P.A. will kill asparagus. Grower, 1960, 53, (19), 1047.
Reports that drift of MCPA from a neighbouring field during the asparagus cutting season killed every bud and 50% of the crowns and badly damaged most of the remaining crowns. - L.K. [O.W.]

951. LINN, M.B., SLIFE, F.W. and BUTLER, B.J. (Univ., Urbana, Illinois, U.S.A.) Prevent 2,4-D injury to crops and ornamental plants. Ext.Circ.Ill.Univ.Agric., 1959, 808, pp.15, figs.11.
2,4-D injury symptoms to tomatoes, grapes, soybeans and snapbeans are described and illustrated, in addition to a section on general symptoms of 2,4-D injury. The various formulations of 2,4-D in common usage are mentioned, the types of spray, and ways in which these may govern or prevent injury to susceptible crops. - J.W.B. [O.W.]

952. CANADA. Ornamentals. [2 Reports] Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 90-1.
The following herbicides were applied 2 days after planting gladioli bulbs in July:- chlorpropham 8 #; chlorpropham 6 # + 2,4-DES 4 #; mecoprop 6 and 8 #; diuron 1, 1.5 and 2 #; EPTC 4 and 6 #; ipazine 2.5 #; neburon 6 and 8 #; dinoseb 2, 3.5 and 5 gal/ac; propazine 2 and 2.5 #; 2,4-DES 4 and 8 #; simazine 1, 2 and 3 #; 2,4-DES 2 # + diuron 0.5 #; 2,4-DES 2 # + simazine 4 #. Propazine 2 and 2.5 # and simazine 2 # were the most effective in controlling weeds without damaging the gladioli, although neburon 6 #, dinoseb 2 gal/ac, 2,4-DES 6 and 8 #, and simazine 1 # all showed promise. The main weeds present were: corn spurrey [Spergula arvensis], plantain [Plantago spp.], barnyardgrass [Echinochloa crusgalli], couch [Agropyron repens], smartweed [Polygonum spp.], and lamb's quarters [Chenopodium album].
The following herbicides were applied in August to a weed free bed of annual flowers in full bloom consisting of petunia, snapdragon, salvia, marigold, zinnia, calliopsis and stocks:- (1) 2,4-DES 4 #; (2) neburon 1 #; (3) monuron 1.6 #; (4) NPA (sodium) 0.8 #; (5) Mylone 85W [DMTT] 300 #; (6) Tropotox [MCPB] 1.2 pints/ac. (1) gave excellent control of germinating broadleaved weeds and little injury to any of the flowers in the test; (3) gave excellent weed control but caused severe injury to all annuals; (2), (4) and (6) gave excellent weed control but caused moderate to severe injury to some annual species; (5) only gave fair weed control and the treatment also resulted in moderate to severe injury. Main weeds present were groundsel [Senecio spp.], corn spurrey, common chickweed [Stellaria media?], low cudweed [Gnaphalium uliginosum], dandelion [Taraxacum spp.], and plantain. - J.W.B. [O.W.]

953. CANADA. Horticultural crops. (b) Fruits, flowers and ornamentals. [10 Reports] Res.Rep. W.Sect.Nat.Weed Comm.Canada, 1959, 105-12.
Apples. [2 Reports] Amitrol 4 # + dalapon 5 # gave good control, for 2 months only, of mixed grasses (mainly annual rye [Lolium multiflorum]) around dwarf apple trees without injuring the trees; neither amitrol 4 # nor dalapon 15 # were effective alone. A heavy sod of couch [Agropyron repens] and Echinochloa crusgalli growing around 3-year-old McIntosh apples was sprayed in October with dalapon 17 #, amitrol 8 # and simazine 10 #. In May no grass was present, but by July grass on the dalapon plots was recovering, and on the amitrol plots Echinochloa was growing without apparent injury. By September, couch had completely recovered on dalapon plots, there was a heavy stand of Echinochloa on amitrol plots, and the simazine plots were bare. No damage was observed on the apple trees.
Strawberries (var. British Sovereign). [4 Reports] 2,4-DES, EPTC, CDEC and 3Y9 4 # followed by rotovation pre-planting - 2,4-DES and 3Y9 gave very good control of clover [Trifolium spp.], smartweed [Polygonum spp.], lamb's quarters [Chenopodium album], and groundsel [Senecio vulgaris] for 5 weeks only; CDEC was ineffective; EPTC gave excellent weed control (except clover) for 8 weeks; strawberries were only injured by the EPTC treatment, which caused 34% of plants to die by September 15th, and 21% to be stunted. 2,4-DES 4 # applied 10 days after planting in April gave adequate weed control for 8 weeks; the area was then cultivated and treated with 2,4-DES and 3Y9 4 #, and simazine 1.5 # in mid-June, and again in August followed by further cultivation; October estimates showed 90, 80 and 70% control of broad-leaved weeds (mainly common chickweed [Stellaria media]) by simazine, 3Y9 and 2,4-DES respectively; only simazine controlled perennial ryegrass [Lolium perenne] seedlings; no treatment caused crop injury. 2,4-DES 2, 4 and 8 # was applied 10 days after planting in April, and repeated in mid-May, mid-June and mid-

August, 4 # gave adequate weed control; injury symptoms were pronounced in the earlier part of the season, but, even with 4 applications of 6 # these tended to disappear by September. A second-year stand of strawberries was treated in October and November with dinoseb (amine) 3 #, propham 6 #, a mixture of these 2, and monuron 2 # + dinoseb (amine) 3 #; all treatments gave adequate control of annual grasses by May except dinoseb applied in October and November and monuron applied in November. Dinoseb + propham or + monuron gave better broad-leaved weed control in November, and there was less crop injury caused by the November treatments. Best all round treatment was dinoseb + propham. In another trial, the same herbicides &in addition monuron 2 # + propham 6 #, were applied on November 6 to a first-year stand on a lighter soil; observations the following spring showed excellent weed control but considerable plant injury, especially where dinoseb was used; monuron + propham gave good seedling grass and broad-leaved weed control with little or no injury.

Blackberries. [1 Report] Mature Himalayan blackberries received the following treatments:- simazine 3 and 6 # in March each followed by dalapon 5 + amitrol 2 # in May; dalapon + amitrol in April and/or May; diuron 1.5 and 3 # in March each followed by dalapon + amitrol in April + MCPB (sodium salt) 2 # in May; and dalapon + amitrol in April + MCPB in May. A slight yield reduction was apparent on sprayed plots, but at the end of the picking season there was little visible evidence of injury except a reduction in leaf size and inrolling of leaf margins on plots treated with dalapon + amitrol in May. Most promising treatment was dalapon + amitrol + MCPB.

Loganberries. [1 Report] Mature loganberries growing on a gravelly loam soil were treated with dalapon 5 + amitrol 2 # in March, + repeat applications in April and/or May, or only May. In March there was little or no new growth, in April new shoots were 3 in. high and in May new canes were 30-36 in. high. The March treatment gave good weed control for 2.5 months with little or no injury, and + April treatment the control lasted for 3.5 months, and injury symptoms, though severe in April, disappeared by picking time. March + April + May treatment caused severe injury which was still apparent in July, and March + May treatment gave excellent weed control and less injury than the 3 treatments.

Ornamentals and Shelterbelts. [2 Reports] 26 1- or 2-year-old bare-root liners were planted in April. Post-planting chlorpropham (granular) 16 # caused marked growth reduction of Chamaecyparis Lawsoniana, C. Lawsoniana Ellwoodii, Juniperus virginiana, Picea pungens, Cedrus atlantica glauca and Erica carnea; pre-planting EPTC 4 # reduced growth of Buxus sempervirens arborescens, Cotoneaster pannosa, E. carnea, Pernettya mucronata, and Rose Royal Visit [Rosa spp.]; post-planting diuron 2 # reduced growth of P. mucronata; and pre-planting 3Y9 4 #, post-planting diuron 2 # + chlorpropham 4 #, and simazine 3 and 6 # caused no adverse effects. Best weed control was given by simazine 6 #, although diuron 2 + chlorpropham 4 #, chlorpropham (granular) 16 #, and simazine 3 # all gave excellent weed control for 2 months; the main weeds were narrow-leaved plantain [Plantago lanceolata], shepherd's purse [Capsella bursa-pastoris], sheep sorrel [Rumex acetosella], corn spurrey [Spergula arvensis] and mayweed [Matricaria spp.]. Shelterbelts including mainly caragana, ash and elm, and some maple in place of elm, were treated with several chemicals impregnated on vermiculite and liquid dalapon between May 26-31 with no pre- or post-cultural operations. Simazine 3, 6 and 9 #, atrazine 4 and 8 #, dalapon 10, 20 and 40 # + 2,4-D 1 #, and TCA 20 and 40 # + 2,4-D 1 # gave good weed control for 1 year but caused severe damage to the trees. Atrazine 8 # gave 90% control of a solid couch grass infestation. - J.W.B.

[O.W.]

954. CANADA. Turf. [10 reports] Res. Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 110-4.

Control of chickweed [Cerastium vulgatum?] and stitchwort [Stellaria graminea?]:- neburon 2, 4, 6 and 12 # gave good to excellent control for 7 weeks but the 2 higher rates caused severe injury to bentgrass, although there was no lasting effect on Kentucky bluegrass; mecoprop 2.25 # gave excellent control with no injury to the bentgrass; 3,4-dichlorophenylpropionamide 8 # gave fair control but caused moderate to severe burning of bentgrass, 2,4-D 0.75 # caused severe burning and control was poor. Excellent control of Medicago lupulina was given by solutions of 2,4,5-TP 1000 p.p.m., 2,4-D 2000 p.p.m. and endothal 2000 p.p.m.

Good control of Cerastium vulgatum was given by fenac 3 #, 2,4,5-TP 1 #, O-(2,4-dichlorophenyl)-O-methyl isopropylphosphoroamidothioate 20 #, and neburon 2 #. Trifolium repens was eliminated by the 2,4,5-TP and fenac treatments only. Fenac burned the turf but most of it recovered in 6-8 weeks.

The following weeds were found to be susceptible to endothal 1500 p.p.m., Polygonum aviculare, Trifolium pratense, T. repens, P. convolvulus, P. persicaria and Matricaria matricarioides; resistant weeds were - Taraxacum officinale, Cerastium vulgatum, Sonchus oleraceus, Chenopodium album, Atriplex patula, Oxalis spp. and Lychnis alba; Medicago lupulina gave variable results; Plantago major leaves were burned but plants regrew from the crown. Kentucky and Canada bluegrass and red fescue were slightly burned, but recovered rapidly.

Mecoprop and 2,4,5-TP 2 # gave excellent control of Cerastium vulgatum and Trifolium repens applied in April, May and June. Late May application caused injury to bluegrass and fescues but this could have been partly caused by hot dry weather 2 weeks after the application.

Mecoprop 1.5 and 2.25 # in 20 gal water/ac did not injure seaside bentgrass when 3 in. high, or 1.25 # in 15 gal of water/ac injure highland bent; 1.5 # gave good control of chickweed, Taraxacum officinale, Polygonum spp., Plantago spp. and Trifolium repens; 2.25 # gave good control of Medicago lupulina and prostrate knotweed [Polygonum aviculare] but only moderately affected yarrow [Achillea millefolium].

O-(2,4-dichlorophenyl)-O-methyl isopropylphosphoroamidothioate 10 and 20 # (liquid and granular) appeared promising for control of crabgrass [Digitaria spp.] without injuring bluegrass.

3,4-dichlorophenylpropionamide 3 and 6 # appeared to reduce bluegrass without giving very effective weed control. A granular herbicide containing 86% calcium arsenate was applied to bluegrass lawns infested with Digitaria sanguinalis, Cerastium vulgatum and Poa annua. On light soils 12 lb and on heavier soils 14 lb/1000 $ft^2$ gave 95-100% control of Digitaria sanguinalis. Good control of Cerastium vulgatum was given by > 10 lb and control of Poa annua was generally satisfactory at higher rates. No turf damage was observed. - J.W.B. [O.W.]

955. THODE, F.W. (Dep.Hort.,Clemson,S. Carolina,U.S.A.) Dowpon as an aid to maintenance of home grounds. Down to Earth, 1960, 15,(4),21.

Two summer applications of dalapon 85%, 4 oz/2 gal water, sprayed up to the stems for grass control, has caused no injury to yaupon, red maple, abelia, Carolina jessamine, tea roses, loblolly pine, Scotch broom, pyracantha, Arizona cypress, pear, grapes, crabapples, Oregon holly-grape, tea olive, ligustrum, wax myrtle or English holly, except where foliage of abelia was sprayed in error and here the abelia recovered. - D.M.L.S. [O.W.]

956. PY, C. (Inst.Franc.Recherches Fruitieres Outre-mer,6,rue General-Clergerie, Paris 16e,France). La lutte contre les mauvaises herbes en plantation d'ananas. Resultats d'essais entrepris en Guinee. [Weed control in pineapple plantations. Results of trials in Guinea.] Fruits, 1959, 14,(6),247-61; 14,(7),291-9; 14,(8),329-40; 14,(9),369-85; 14,(10),423-30, (In.e.span. russ.portuguese), figs.56,tabs.20,bibl.53.

The author first discusses the general problem, the pros and cons of mulches (bituminous paper, polyethylene and straw) and of mechanical control methods and the weed flora. A list of the principal weeds is included with botanical and vernacular names. The ecology and distribution in Guinea of Imperata cylindrica, Panicum repens, Cynodon dactylon and Cyperus rotundus (the 4 weeds in Guinea most resistant to herbicides) is discussed.

A. Comparison of monuron, diuron and simazine.

Trials are described in which monuron 4 and 8 kg/ha, diuron 2,4 and 8 kg/ha and simazine 1.25, 2.5 and 5 kg/ha were applied (1) at or shortly after planting, at the beginning, in the middle, and at the end, of the rains, (2) 9 and 11 months after planting, at the beginning and at the end of the rains, and (3) in April to bare soil after ploughing. Diuron gave much better and more durable weed control than monuron at similar rates in all trials and resulted in increased leaf growth and yield of pineapples corresponding with the rates. In 2 trials 8 kg/ha depressed flowering %s compared with lower rates and plants whose crowns were deliberately sprayed were injured more by diuron than by monuron. The following weeds were resistant to diuron: grasses especially Panicum sp. and Panicum afzelii, Digitaria adscendens, Pennisetum subangustum, Hyparrhenia sp., Commelina nudiflora, Clerodendron scandens and Smilax kraussiana. Monuron gave very good control of P. afzelii and Pennisetum subangustum but was ineffectual against Digitaria sp., D. adscendens (which infested the monuron plots) & Oldenlandia herbacea. Simazine caused no injury but gave very poor weed control in all trials. Low volume spraying at 200 l/ha reduced flowering %s caused slight chlorosis in the diuron 8 kg/ha plots and tended to be less effective than a volume of 1200-1500 l/ha.

The later treatments (9 and 11 months after planting) gave more lasting weed control than those at planting and those at the end of the

rains more lasting than those at the beginning. Trials with these compounds in other parts of Guinea on soils of high organic content were so much less effective than these (which were on sandy clay or low organic content) as to be uneconomic.

B. Dalapon. Dalapon 4.25 kg/ha gave good control of D. adscendens, Paspalum conjugatum, Eleusine indica, Cynodon dactylon, & Pennisetum subangustum but gave poor results when used before weed emergence. When applied to 2-months old pineapples dalapon 8.5 and 17 kg/ha caused some necrosis at leaf tips but this was completely outgrown 8 months later; no injury was caused by 4.25 kg/ha. Pineapples treated with 4.25 and 8.5 kg/ha when nearly 8 months old showed greater susceptibility (plants 30 cm from the treated area were affected) and at harvest there was a higher % of cracked fruit on the 8.25 kg/ha plots than on the control. Increased cracking resulting in rotting and losses of 50-80% was also caused by 8.25 kg/ha in another trial when applied 9 and 11 months after planting. It is advised that dalapon should not be applied at rates over 4.25 kg/ha and not to pineapples older than 6 months.

C. PCP. In 1 trial PCP 3 kg/ha mixed with 25 l gas oil gave as good results when applied in 200 l/ha as when applied in 1500 l/ha, and low volume is recommended during the rainy seasons. Oils low in aromatic content appear to be inferior to gas oil as fortifiers of PCP from the weed control point of view, but oils with a high aromatic content may be more injurious to pineapples. Care should in any case be taken to avoid spraying young pineapple leaves with PCP. When applied before weed emergence PCP 3-5 kg/ha controls weeds for ca. 1.5 months and when applied after emergence for 3-4 weeks.

D. (1) Imperata cylindrica. Hoeing of the rhizomes every 2 or 3 weeks is recommended as spot treatment and for bigger infestations cross ploughing followed by 4-6 rotary cultivations, preferably during the driest season. Dalapon 30-50 kg/ha (preferably applied in split doses at intervals of 2-3 months) and special mineral oils, e.g. "Shell lallang oil", at 450-650 l/ha + 250 l/ha a few weeks later, will also give control and should be applied for preference in dry weather a few weeks before planting. In wet weather a sticker is advised. A combination of the cultural and the chemical treatments probably is the most efficacious and economic method. If the soil is not worked between crops a rapid growing cover crop should be planted to prevent invasion.

(2) Panicum repens. The same methods as for I. cylindrica are advised.

(3) Cynodon dactylon. Monuron and diuron control C. dactylon effectively but only at rates higher than that (5 kg/ha) normally used in pineapples.

Dalapon 5-10 kg/ha generally gives complete control.

(4) Cyperus rotundus. Continual deep ploughing during dry weather will considerably reduce the population. For small areas fumigation with methyl bromide 5 kg/100 m² is effective but expensive. Monuron 22 kg/ha applied immediately after ploughing with a second ploughing and application at the same rate 6 weeks later is also costly and sterilises the soil for several months. Diuron is less effective than monuron. In trials amitrol 5-10 kg/ha applied after ploughing has given better results than 2,4-D, TCA, dalapon, simazine or PCP but it will not eradicate large infestations. When amitrol was applied to the heart of the pineapples' rosettes, large white spots appeared on the leaves and growth was checked for several months; however, applied to the soil near the pineapples it was not injurious.

E. Methods of application. In this section the author discusses, in detail, the 2 types of sprayer commonly used - ordinary knapsack and pneumatic - different types of jet, calibration, and the use of viscous oils as carriers and of water thickeners (e.g. "Modocoll" which is a cellulosic ether, and starch) for low volume application. It was found that "Spindle" oil (viscosity 4.2 E-20) had no herbicidal effect and was not economic as a carrier. By using viscous oil or a water thickener a volume of 100-200 l/ha can be applied with ordinary knapsack sprayer and of 50-100 l/ha with a pneumatic atomising sprayer. The latter is not, however, more economic and in the event of strong air currents involves greater risk of injury if used soon after planting.

In the final section the author gives recommendations for a choice of treatments, pre-planting, at planting, and post-planting. - D.M.L.S. [1(966.52)]

957. DETROUX, L. and DERMINE, E. (Sta. Phytopharmacie, Gembloux, Belgium). Le desherbage chimique en culture fruitiere. [Chemical weed control in fruit crops.] Rev. Agric. Brux., 1959, 12, (10-11), pp. 16, (F.), figs. 2, tabs. 4.

The following were applied after cultivation in the spring for a second year in succession, to 2-year-old apple trees (vars. Cox's Orange, James Grieve, Golden Delicious

and Winston), (rates are in kg/ha): simazine 1 and 2.5, neburon 1.48 and 2.96, dalapon 12.75 + DNOC (ammonium) 4.95, TCA 18.6, dalapon + 2,4-D (sodium) + MCPA (sodium) (active ingredient %s 51 + 11.7 + 9.6) 20, and monuron 8 and DNOC (13% in oil) 50 l/ha. In addition, monuron 3.2 and diuron 3.2 were applied for the first time. The volume rate was 800 l/ha. The estimated control after ca. 7.5 weeks of Senecio vulgaris, Stellaria media, Matricaria chamomilla, Sinapis arvensis, Agropyron repens, Plantago major and of grasses, other annuals, and other perennials is tabulated, also injuries to the 4 apple varieties and effects on their growth.

In the first year which was dry DNOC gave the best apple growth. Averaged over all varieties and both years (the second was wet) the most promising results, both from the point of view of overall weed control and apple growth, were given by monuron 3.2 which was closely followed by simazine 1. Diuron also showed promise. - L.K. [101(493)]

958. CANADA. Fruits. [5 Reports] Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 83-9, tabs.3.

Strawberries. All treatments were applied after establishment. Promising results were given by:- (* = good control Raphanus raphanistrum and Chenopodium album) amiben 6 #, neburon 2-4 #, Crag 1 [2,4-DES] 4 #, * trietazine 2 #, *dinoseb (granular) 4 #, CDAA 5 #. Injury was caused by trietazine 3-4 #, *chlorpropham (granular) 5 #, *Solan [N-(3-chloro-4-methylphenyl)-2-methylpentanamide] 2 #, atrazine 2 #, FW 734 [N-(3,4-dichlorophenyl)propanamide] 1-2 # and simazine 1 #. Variable results were given by *EPTC 3-10 #; 6 # incorporated gave excellent control of Ambrosia artemisiifolia, Amaranthus retroflexus, Chenopodium album and annual grasses. Echinochloa crusgalli was controlled by trietazine, neburon, dinoseb, EPTC and Solan.

Upland Cranberries. When applied in early July, no effect on crops or weeds was given by: neburon 2 and 4 #, Crag 1 [2,4-DES] 3 and 6 #, Alanap [NPA] 3-8 #, simazine 2 and 4 #, CDEC, Urab (granular) [fenuron-trichloroacetate] 3 and 6 #, FW 734 8 #; severe crop injury and moderate weed control was given by diuron 6 and 12 #, Zytron [O-(2,4-dichlorophenyl)-O-methyl-isopropylphosphoroamidothiate 8 and 16 #, Karmex FP [fenuron] 15 and 30 #. Amitrol 8 and 16 # caused no injury but gave only fair weed control. Applied end of September Urab (liquid) in 150 gal fuel oil/ac gave good weed control with little injury, while Zytron 6 # in 75 gal fuel oil and 2,4,5-T 6 # caused some injury and gave moderate weed control.

Blueberries. When applied in May or July insufficient selectivity was shown by amiben 2-8 #, atrazine 1-10 #, EPTC 3-9 #, fenac 2-6 #, neburon 2-4 #, Zytron 4-8 # or simazine 1-10 #; promise was shown by amitrol 21% 1-3 gal/ac.- L.K. [O.W.]

959. COMELLI, A. Les agrumes en Israel. [Citrus in Israel.] Fruits, 1960, 15,(3), 129-38, (F.)

p.133. Soil treatment. In young plantations grass is controlled by spraying along the rows with Shell B oil 800 l/ha and the ground is disked in summer. In older plantations, where grass no longer grows at the foot of the trees, the ground is disked in spring after applying a fertiliser and the grass is then either killed by herbicidal oil, or cut with a rotary hoe at a height of ca. 5 cm above the ground. - D.M.L.S. [O.W.]

960. SINGH, J.P. and RANDHAWA, G.S. (Ind. Agric.Res.Inst.,New Delhi,India). Effect of gibberellic acid and para-chlorophenoxyacetic on growth and fruitfulness in the strawberry. Indian J.Hort., 1959, 16,(1),14-7.

The strawberry var. Pusa Dwarf Early was sprayed with gibberellic acid and chlorpropham at 5 and 10 p.p.m. twice. Chlorpropham 10 p.p.m. resulted in earlier fruit maturity by 5 days. None of the treatments affected fruit quality. - From Biol.Abstr.,(Plant Sciences), 1960, 35,17149.

961. SOUTHWICK, L. (Dow Chem.Co.,Agric.Chem., Development,Midland,Mich.,U.S.A.) New uses for Dowpon grass killer. Down to Earth, 1960, 15,(4),23.

The following recommendations have been officially approved:- (1) (for Midwestern, Eastern and Southern areas, not normally requiring irrigation) for grass control in bearing peach orchards (but not in young, non-bearing orchards or within 30 days of harvest) dalapon 85% 1 lb/20 gal water, applied so as just to wet the grass without run-off and avoiding peach leaves, with repeat 2-3 weeks later and again if needed; (2) for use in cranberries (Wisconsin) (a) overall - dalapon 8.5-10.2 # in autumn after harvest for control of grass and sedge weeds in young non-producing or old weed infested and unproductive beds as crop the following year will be affected; (b) as swab treatment - dalapon 1.7 lb/5 gal

water applied twice with interval of 2 weeks to grasses as soon as they appear above the vines, but not within 60 days of harvest; if the solution drips on to the vines the next year's crop may be reduced. - D.M.L.S. [O.W.]

962. GAMBRELL, C.E. and RHODES, W.H. (Sandh 11 Exp.Sta.,Columbia,S.C.,U.S.A.) Effect of Dowpon on Bermuda grass in peach orchards. Down to Earth, 1960, 15,(4),11-12, figs.2,tabs.1.

Dalapon 85% at a concentration of 1:20 at 3 quarts/tree applied 3 times between May 23rd and June 20th to mature peach trees of 6 named varieties gave excellent top kill of Cynodon dactylon (and 80% sod kill by the next spring) and caused only slight temporary injury to the trees. A concentration of 1:10 gave no better control and was more injurious. Residues in the fruit were not above the authorised level. Late summer applications (August-September) were less effectual and of less benefit to the trees. In a trial a year later concentrations of 1:20 and 1:40 at 2 quarts/tree applied 2-3 times between June 2nd and August 7th gave 80 and 74% control of C. dactylon respectively and (for 6 weeks) 62 and 66% control of crabgrass [Digitaria sanguinalis] without injuring any of 9 peach varieties: 1:10 caused moderate leaf burn and slight terminal bud injury. - D.M.L.S. [O.W.]

963. MITCHELL, J.F. (Camden Park Exp.Sta., St.Vincent). Guide to chemical weed control. Govt Printing Office, 1960, pp.14, tabs.1.

Apart from some general introductory remarks on herbicides this pamphlet gives recommendations and notes on chemical weed control in various crops and on the control of different types of weeds. Bananas - as a pre-em. treatment diuron 3 + dalapon 5 # is particularly recommended; good results have also been given by neburon 5 #, PCP in diesel oil and sodium arsenite. Arrowroot - pre-em. monuron or diuron 1.5 # are recommended; MCPA and 2,4-D have also given good results; dalapon 5 # is injurious. Lawns - 2 to 3 applicationf of 2,4-D at 1 oz/gal is said to remove Cyperus rotundus from Savannah grass. Cocoa - dalapon 5 # has been found to be safe; PCP in diesel oil is generally used. Yams and tannias - diuron 1.5 # pre-em. is recommended; neburon and simazine have also given satisfactory results. Dalapon may be used in tannias but not in yams. Peanuts - diuron 1.5 # pre-em. recommended (up to 3 # may be used or neburon up to 5 #); simazine 2 # caused scorch and dalapon is not recommended. Sweet potatoes - dalapon at 5 # appears to be harmless. Notes are also given on weed control in cotton, sugar cane maize, grasses, coffee, citrus, pineapples and coconuts. A table summarises which of the 9 herbicides may be used in each crop. - L.K. [16(972.9)]

964. RUINARD, J. The chemical control of weeds on sugar-cane estates of Java. Netherlands J.agric.Sci., 1960, 8,(1), 34-8, figs.3.

Preparing the land for sugar-cane after harvesting a rice crop is described with illustrations. In general this consists of excavating trenches and throwing the clods of earth from these onto the adjacent land to form ridges; after planting the sugar-cane in the trenches 2 earthing-up operations are carried out. The main weeds present are usually grasses and sedges. The application of PCP, oils, 2,4-D (sodium or ester) + TCA, or monuron after excavating the trenches gave unsatisfactory weed control and injured the cane. TCA 20 kg/ha + 2,4-D (ammonium) 2 kg/ha applied immediately prior to trenching gave very satisfactory weed control for 8 weeks (i.e. for 5-6 weeks after the cane was planted), and caused no harmful effects to the crop; higher yields were obtained due to the suppression of the weeds.

Similar results were obtained with monuron 12.5 lb/ha but this was not so economical to use.

A description of the application of the chemicals is included. - J.W.B. [O.RE.]

965. MEDCALF, J.C. and de VITA, R. (IBEC Res.Inst.,Matao E.F.A.,Estada de Sao Paulo,Brazil). The use of pre-emerge herbicides for weed control during coffee harvest. IBEC Res.Bull., 1960, 19,pp.24, figs.7,tabs.6,bibl.16.

In 1 trial 2,4-D (ester) and simazine both 0.25-2 kg/ha were applied to clean weeded soil under established coffee in mid-April. At the highest rate both compounds gave >90% weed control (the main weeds were Galinsoga parviflora, Solidago microglosa, Euphorbia prunifolia, Parietaria debilis and some Digitaria sanguinalis) till August; in each case the 1 kg rate was nearly as good as the 2 kg. Under Brazilian conditions 2,4-D 1 kg/ha or simazine 0.5 kg/ha would be cheaper than the conventional methods of weed control. At equal rates simazine was about twice as effective as 2,4-D. - L.K. [5(87)]

966. RUMMUKAINEN, U. Simatsiinin käytöstä riikaruohojen torjuntaan kesän 1959 kokeiden valossa. [The use of simazine in controlling weeds in forest nurseries.] Metsät.Aikak., 1959, (8),273-5,282, (Finnish.e.), bibl.2.

Rates of application of as little as 1 kg simazine/ha reduced weed coverage to about 14% of that on untreated plots. Poa annua, Sagina procumbens, Gnaphalium uliginosum and Capsella bursa-pastoris were susceptible, and Sonchus arvensis and Agropyron repens resistant. The chemical was more effective in the wet spring of 1958 than in the dry one of 1959. In the areas sprayed in 1958 with 1-2 kg/ha, many susceptible species grew well the following summer. Seedlings of Pinus sylvestris were very susceptible to damage by 2-3 kg/ha in the first 30-35 days after sowing, but became rapidly more resistant thereafter. Seedlings of Picea abies and older plants of both species were more resistant. - For.Abstr., 21,1714.

967. OLBERG, R. (Forst.Versuchsanst., Stuttgart-Weilimdorf,Germany). Merkblatt über die chemische Unkrautbekämpfung im Forstpflanzgarten-Stand 1959. [Notes on chemical weed control in forestry - the position 1959.] Allg.Forstz., 1960, 15, (8),111-2, (G.)

Mainly with reference to simazine but also includes the information that HS 55 (cyclo-octyldimethylurea + butinol-(3-chlorophenyl)carbamate,has given good results pre-em. on seedbeds of pine, spruce and Douglas fir if applied within 3 days of sowing, while alder and birch are susceptible. - L.K. [O.F.]

968. ARBONNIER, P. Produits chimique sylviculture et reboisement. L'utilisation des auxines pour l'elagage artificiel. [Chemical products in silviculture and reafforestation. The use of auxins for artificial pruning.] Rev.for.franc., 1959, 8-9,605-9, (F.), bibl.4.

Trials undertaken with 2,4,5-T in Germany are reviewed. Oak branches were successfully killed by foliage sprays of 2,4,5-T (amyl ester) 0.2% without adversely affecting the trees, a protective scar layer of 1-2 mm being formed at the base of the treated branches within 1 year. It is advised that treated trees should be at least 30 years old and have a maximum diameter of 20 cm and a minimum height of 12 m. Spraying should be done during active growth between June and August. Retreatment may be necessary after 4 years. Results with conifers, which are more resistant to 2,4,5-T, have been unsatisfactory and those with poplars have not been definitive. In 1 trial treated poplar branches decomposed rapidly and were invaded by parasitic fungi. - D.M.L.S. [O.F.]

## BIOLOGY OF WEEDS AND POISONING BY WEEDS

969. * HARSHMAN, E.P. The changes in vegetation following biological control of Hypericum perforatum. For.Thesis, Univ.Idaho, 1956.

970. * GARTNER, F.R. Competition between Lolium multiflorum and Ceanothus cuneatus for nitrogen on two different soil types. For.Thesis, Calif.Univ., 1956.

971. * NORD, E.C. Bitterbrush ecology; some recent findings. Res.Note U.S.For.Ser.Pacific Sthwest For. & Range Exp.Sta., 1959, 148, pp.8.

972. * SCHARPF, R.F. Growth and extension of the endophytic system of the dwarf mistletoe (Arceuthobium campylopodum Dougl.) For.Thesis, Calif.Univ., 1957.

973. GAY, P.A. (Nat.Conservancy, 19 Belgrave Sq.,London,S.W.1,England). Ecological studies of Eichhornia crassipes Solms. in the Sudan. I. Analysis of spread in the Nile. J.Ecol., 1960, 48,(1),183-91, figs.3,tabs.4,bibl.5.

A description of the spread of Eichhornia crassipes in the Nile is given, and five factors are mentioned which are known to affect dispersal, growth rate, speed of river current, wind direction, quantity of free-floating material, and steamer frequency.

The continued spread of this weed will not only block the river to steamer traffic, but will endanger the cotton-growing area of the Gezira which uses the waters of the Nile for irrigation. - J.W.B. [O.RE.]

974. BOMMER, D. (Justus Liebig Univ., Giessen,Germany). Uber Zeitpunkt und Verlauf der Blütendifferenzierung bei perennierenden Gräsern. [The time and course of flower differentiation in perennial grasses.] Z.Acker-u.Pflbau., 1959, 109,(1),95-118, (G.e.), figs.16,tabs.1,bibl.52.

Investigations over 1 or 2 years showed that the reproductive phase began in September to

early October for Alopecurus pratensis and Anthoxanthum odoratum; early January to mid-February for Poa pratensis, Bromus erectus, Festuca ovina and B. inermis; mid-February to mid-March for Dactylis glomerata, Arrhenatherum elatius, Trisetum flavescens and F. rubra; mid-March to mid-April for F. pratensis, Lolium perenne and L. multiflorum; early to mid-April for P. palustris, Agrostis alba, Phleum pratense and Phalaris arundinacea. For later varieties of L. perenne it begins in May. The effects of day length and temperature are reviewed. - From Author's Summary. - L.K. [O.W.]

975. WITTS, K.J. (Rothamsted Exp.Sta., Herts.,England). The germination of Polygonum species in the field and in the glasshouse. J.Ecol., 1960, 48,(1),215-7, tabs.1, bibl.2.
Recovery of seeds from soil samples (6 in. in depth) showed P. persicaria to be more than twice as abundant as P. aviculare and P. convolvulus. The total annual germination was the same for all 3 species but germination of P. aviculare and P.convolvulus was almost complete by mid-April while P. persicaria continued to germinate until July. Germination of all 3 species in soil samples placed in glasshouse pans ceased after May 27th. Although the percentage germination of each species was greater in the glasshouse than in the field, their times of germination were similar.
The greater abundance of P. persicaria in the soil samples is explained, by the author, by its ability to continue germination into the summer after herbicide applied in May of the 2 previous years had destroyed all weed seedlings present at that time. - J.W.B. [O.RE.]

976. STOJANOVIC, D. Prilog proucavanju biologije Cuscuta epithymym Mur. - Vegetativno prezimljavanje. [A contribution to the study of the biology of Cuscuta epithymum Muray - vegetative dormancy.] Zastita Bilja, 1959, 51,47-9, (Serbo-Croatian.e.), bibl.2.
In Serbia the vegetative dormancy of C. epithymum is quite widespread. It occurs at a depth of 1-2 cm below the surface and occasionally at depths up to 4-5 cm; these observations were made in a lucerne field on alluvium in 1956. - J. Kovacevic.

977. * KAWATAKE, M., TAKIZAWA, K. and KATAYAMA, M. [Effects of temperature upon germination of some forage and wild plants.] Bull.Div.Plant Breed.& Cult., Tokai-Kinki, 1955, 31,(2),169-76, (Jap.e.)
Includes Eragrostis spp.

978. CORNS, W.G. (Univ.,Edmonton,Alberta, Canada). Effects of gibberellin treatments on germination of various species of weed seeds. Canad.J.Plant Sci., 1960, 40,(1), 47-51, tabs.2,bibl.6.
Exposing seeds to up to 500 p.p.m. gibberellin continuously, or up to 2000 p.p.m. as a 24-hour pre-soaking treatment did not appreciably affect the dormancy of Polygonum persicaria, P. convolvulus, Axyris amaranthoides, Chenopodium album, Amaranthus retroflexus, Silene noctiflora, Stellaria media, Neslia paniculata, Potentilla norvegica, Melilotus alba, Cicuta maculata, Moldavica parviflora, Linaria vulgaris and Plantago major. In most cases the germination of Avena fatua was significantly increased after gibberellin treatment; significantly increased germination was also obtained for Thlaspi arvense, Galeopsis tetrahit, and Sinapis arvensis (in this case theresults were inconsistent), and an increase, although not significant, for Lappula echinata. - J.W.B. [O.RE.]

979. GRIFFITHS, D.J., ROWLANDS, D.G. and PEREGRINE, W.T.H. (Welsh Plant Breed.Sta., Aberystwyth,N.Wales). Cytogenetic relationships of certain artificial and natural species of Avena. J.agric.Sci., 1959, 52,(2),189-99, figs.4,tabs.5,bibl.20.
Principally with reference to the cytology, morphology and behaviour of hybrids between certain artificially produced amphiploids and other hexaploids. Species mentioned include Avena barbata, A. strigosa, A. sterilis and A. fatua. - L.K. [409(42)]

980. KOVACEVIC, J. (Zavod za Agroekologiju, Zagreb,Kaciceva ul 9,Yugoslavia). Procjena termofilnosti stanista na oranicnim povrsinama pomocu korovske vegetacije. [Observations on the effect of temperature of arable soils on weeds.] Vesnik, 1959, 7,(3/4),1-4, (Serbo-Croatian), figs.1, tabs.1,bibl.8.

981. * YOUNGNER, V.B. Environmental factors affecting Bermudagrass growth and dormancy. Sth.Calif.Turfgrass Cult., 1959, 9,(4),25-6.

982. * KOVACEVIC, J. (Zavod za Agroekologiju, Zagreb, Kacioeva ul 9, Yugoslavia). Podrijetlo korova. [The origin of weeds.] Priroda, 1959, (4), 1-3, (Serbo-Croatian). [61(497.1)]

983. * EDGECOMBE, W.S. Some major weeds of the north Beka'a. Amer.Univ.Beirut, Facul. Agric.Sci.P., 1959, 6, pp.156.

984. HAGSAND, E. and THORN, K-G. (Roy. Swed.Acad.Agric., Uppsala, Sweden). Norrländsk vallodling. Resultat av en vallinventering i Västernorrlands, Jämtlands, Västerbottens och Norbottens län 1955-1957. [Norrland's grassland. Results of an inventory of grassland in the VästerNorrland, Jämtland, Västerbottens and Norrbottens provinces 1955-1957.] K.LantbrAkad. Handl., Stockh., 1960, (Suppl.e), pp.156, (Sw.e.), figs., tabs.46, bibl.44.
p.107-32. Weeds in grassland. Reviews the weeds found with reference to their importance, occurrence and ecology. - L.K. [O.W.]

985. * FUJII, KINBEE. [Seasonal aspect of weed communities on the land under cultivation.] Hikobio [Hiroshima], 1952, 1, (3/4), 163-74, (Jap.)

986. BEST, K.F. Weed distribution. Res.Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 122.
Suckleya suckleyana has been found in a farm garden in the Vantage district about 50 miles south of Moose Jaw. - L.K. [O.W.]

987. HOLZ, W. and RICHTER, W. (PflSchAmt, Oldenburg, Germany). Verfüttcrung von Duwockheu ohne Gefahr. [Feeding hay containing marsh horsetail without danger.] LandwBl.Weser-Ems, 1960, (8), pp.1, figs. 1, tabs.2.
Feeding hay containing marsh horsetail [Equisetum palustre] sprayed with growth regulators to 7 cows for 23 days had no effect on the quantity or fat content of their milk. - L.K. [220(43)]

988. MACLEAN, A. Small arrowgrass causes cattle losses in the Cariboo. Forage Notes, 1959, 5, (1), 20-1.
Triglochin palustris, which is also toxic to stock, is distinguished from T.maritima and its distribution in Canada briefly discussed. Symptoms and treatment of poisoning are the same for both spp. - D.M.L.S.

Noted

989N. RICHTER, W. (Biol.Bundesanst., Oldenburg, Germany). Uber die Wirkung starken Feldmausbefalls (Microtus arvalis Pallas) auf den Pflanzenbestand des Dauergrünlandes und der Acker. [The effect of severe infestations of field mice (Microtus arvalis Pallas) on the plant composition of permanent grassland and of arable land.] Abh.Naturw. Bremen, 1958, 35, (2), 322-34, (G.), tabs.4, bibl.8.
A fuller report of the work reported in Weed Abstracts, 6, 1826. - L.K. [218(43)]

## AQUATIC AND WOODY WEEDS AND THEIR CONTROL

See also 940N, 973, 1035, 1103, 1104.

990. CANADA. Aquatic weed control. Res. Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 74-5.
% Control of Polygonum hydropiper 1 season following August treatments in 150 gal/ac was simazine (pellets) 10 #, 95%; amitrol + ammonium thiocyanate 8 #, 90%; monuron 16-32 #, diuron 16-32 # and simazine 10-20 # (wettable powders) 40-70%. Temporary top kill was given by DN amine [dinoseb (amine)] 7.2 #, dalapon 38.4 # + 2,4,5-TP 4.8 #, 2,4,5-TP, PCBA [PBA] 12 #, TCB [TBA] 16 # and amitrol 6 # (wettable powder).
The initial kill of Nymphaea spp. 6 weeks after spraying was greater with 2,4,5-TP 4 # in 150 gal than with 2,4,5-T (ester) 4 # in 150 gal, 2,4-D (ester) 50 # pellets or borate-benzoic acid complex 435 # (pellets). - M.E.L. [O.W.]

991. McLARTY, D.A. Observations on chemical control of Cladophora in Lake Ontario. Res. Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 115-6.
Aqualin [acrolein] 6-10 p.p.m. eradicated Cladophora. Copper sulphate 10 p.p.m. limited growth, tribasic copper was somewhat more effective and sodium arsenite 3 and 6 p.p.m. again rather more so. Hyamine (a quaternary ammonium compound) was similar to arsenite. - L.K. [O.W.]

992. GEORGE, K. (Bose Res.Inst.,Calcutta, India). Destruction of Salvinia, through herbicides. Trans.Bose Res.Inst., 1956, 1958, 21,1-8, figs.
A 0.2-0.5% Karmex [monuron?] - kerosene aqueous mixture sprayed at the rate of 80 gal/ac on rice field eradicates Salvinia when applied at early stages of sporophytic growth of the weed, without any injury to the crop. - Biol.Abstr.,Plant Sciences, 1960, 35,17093.

993. HOLZ, W. (PflSchAmt.,Oldenburg, Germany). Wirkung und Anwendung verschiedener Unkrautbekämpfungsmittel. [The effects and uses of various weedkillers.] LandwBl. Weser-Ems, 1960, (12), pp.2.
Includes the information that dichlorobutyric acid has been found to be particularly effective against Wasserschwaden [Glyceria aquatica]. - L.K. [222(43)]

994. ARNER, D.H. (Polytechnic Inst., Alabama,U.S.A.) Experimental burning, fertilizing, and seeding on utility line rights of way. Ph.D.Thesis, 1959, pp.143, Microfilm $2.50, Xerox $6.80.
Burning was the only treatment tested which significantly reduced woody vegetation, and this reduction was possible only when the herbaceous vegetation was dense enough to produce a "hot" fire. - From Diss.Abstr., 20,3458. - J.W.B.

995. REPP, G. (Rosasgasse 21,Vienna, Austria). Die Anwendung chemische Unkrautbekämpfungsmittel in der Österreichischen Forstwirtschaft. [The use of herbicides in Austrian forestry.] Centralblatt Forstwesen, 1959, (3), 168-89, (G.), tabs., bibl.8.
TCA applied in June was more promising for the control of Solidago canadensis than sodium chlorate 300 kg/ha or 2,4-D. August applications of sodium chlorate 200 kg/ha gave 60% kill of bilberry [Vaccinium myrtillus], Calluna and Erica but gave poor results on cranberry [Oxycoccus sp.]; 2,4-D, 2,4,5-T and TCA all gave excellent results on all 4 species. TCA gave very promising results on Calamagrostis epigeios and Carex brizoides; sodium chlorate 200 kg/ha had a temporary effect only. TCA applied as a dust gave slower, but effective, results. Reference is also made to: (1) the effect of sodium chlorate and 2,4,5-T on certain other woody weeds, (2) to both compounds and TCA on certain tree spp. and (3) to work done elsewhere. - L.K. [49(436)]

996. BRUNING, D. Wirkung eines Wuchstoffpräparates zur Abtötung von Robinien- und Roteichenstöcken auf der Düngungsversuchsfläche Scheeren (StFB "Collbitzer Heide). [The effect of a growth regulating substance for killing stumps of black locust and Northern red oak on the fertilizer trial area near Scheeren (StFB "Collbitzer Heath). Arch.Forstwesen, 1959, 8,(11),964-75, (D.russ.e.), figs.7,bibl.1,tabs.4.
2,4,5-T in diesel oil was applied in the winter of 1958 to stumps of 8 year old black locust [Robinia pseudoacacia] and northern red oak [Quercus borealis] that had been used in a fertilizer experiment 2 years previously. Root suckers of black locust were much more numerous and taller and stool shoots of red oak much more numerous on plots that had been treated with potassium and magnesium. - L.K. [O.F.]

997. FARMER, J.D. Programming right of way brush control. Down to Earth, 1960, 15,(4),19-20, figs.1.

998. CANADA. Weeds and brush in non-crop land. (a) Roadsides and rights-of-way. [4 Reports] Res.Rep.E.Sect.Nat.Weed Comm. Canada, 1959, 92-94.
2,4,5-TP 5-6 # in 125-150 gal in June 1956 gave 75% kill of Acer saccharum 6-10 ft high. Regrowth from the root collar zone of survivors was observed in 1958. Fenuron pellets on 5 ft by 5 ft lattice at 6 g/site or at 14-15 g/tree in June 1958 caused slight damage to Crataegus spp., Cornus spp. and apples [Malus sp.] on gravelly loam or on gravelly clay loam; by August 1959 all the trees had recovered. In July 1959, folowing spraying in 150 gal July 1957 and 1958, the weed control on roadsides by Atlacide (60% sodium chlorate) 50 # + 2,4-D 2 # slightly > Atlacide 100 # >> 2,4-D (amine) 4 # or 2,4-D + 2,4,5-T 2 #. Weed control by diquat 4 # after 1 year > diquat 2 # + 2,4-D 4 # and equalled that given by Atlacide. Main weeds were Asclepias syriaca, Solidago canadensis, Taraxacum officinale, raspberry [Rubus sp.], Equisetum arvense, Daucus carota, Ambrosia artemisiifolia var. elatior and brush species. Amitrol controlled E. arvense and S. canadensis but not D. carota 15 months after treatment. - M.E.L. [O.W.]

999. JOHNSON, J.A. (Coll.Mining & Technology,L'Anse,Michigan,U.S.A.) A test of the effectiveness of sodium arsenite

impregnated paper strips in killing aspen and northern hardwoods. Tech.Bull.Ford For.Cent.,L'Anse, 1959, 2, pp.4, tabs.2.
Absorbent paper tabs (2 in. x 0.625 in. x 0.0625 in.), heavily impregnated with sodium arsenite, were inserted under the bark of sugar-maple, basswood, aspen and elm in a 40 year old stand. In general, 1 tab was used for stems 3-4 in. in diameter, 2 for those 5-8 in., 3 for 9-12 in., and 4 or more for larger trees. The effect of the impregnated tab was to loosen a strip of bark 2-4 in. wide, killing the cambium beneath; this effect evidently followed the sap stream up the stem. A few small or poorly developed trees were completely defoliated by this method, but on the whole complete crown kill was rare. - J.W.B. [O.F.]

1000. CORNS, W.H. (Univ.Alberta,Canada). Range weed and brush control. Res.Rep. W.Sect.Nat.Weed Comm.Canada, 1959, 78.
Foliage sprays at 3 # in 30 gal in June on mixed vegetation of sand dunes in Alberta gave the following results:-

| Species | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Amelanchier alnifolia | VS | VS | IR | VS |
| Arctostaphylos uvaursi | IR | IR | R | IR |
| Corylus cornuta | VS | VS | RI | VS |
| Lathyrus venosus | VS | VS | VS | VS |
| Populus tremuloides | IS | S | R | S |
| Prunus melanocarpa | SI | SI | RI | IS |
| Prunus pensylvanica | S | S | RI | S |
| Rosa sp. | RI | VS | R | SVS |
| Symphoricarpos occidentalis | IR | IR | R | IR |

1 = 2,4-D (ethyl ester); 2 = 2,4,5-T (isooctyl ester); 3 = fenac (sodium); 4 = 2,4,5-TP (propylene glycol butyl ether ester).
R = resistant; I = intermediate; S = susceptible; VS = very susceptible. - M.E.L. [O.W.]

1001. CANADA. Weeds and brush in non-crop land. (c) Poison ivy. [1 Report] Res. Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 109.
All the following treatments in 2 consecutive years gave satisfactory control of Rhus radicans:- amitrol 4 #, 2,4,5-TP (propylene glycol butyl ether ester) 2 #, 2,4-D 2 #, 2,4-D 1# + 2,4,5-T 1 #, AMS 1 lb/100 $ft^2$ all in 80 gal/ac and borates 3 lb/100 $ft^2$ applied dry. - M.E.L. [O.W.]

## OTHER WEEDS AND THEIR CONTROL

See also 926,929,932,934,935,936,937,938, 940N,943,944,945,952,953,954,956,957,958, 962,963,965,966,995,998,1000,1042,1056, 1103,1104,1105.

1002. CANADA. Weeds and brush in non-crop land. (b) Soil sterilants. [12 Reports] Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 95-108.
Simazine 30 # gave 95% control of vegetation for 2 years. Control during 2 growing seasons was given by Urox [monuron trichloroacetate] 435 #, simazine 20 #, monuron 48-60 #, Ureabor [borate + fenuron] 870 #, atrazine 20 #, chlorate-borate-monuron mixtures 2 lb/$ft^2$ 3% monuron or borax 2 lb/100 $ft^2$ and chlorate-borate mixture 4 lb/100 $ft^2$.
The effectiveness after 1 year of simazine, Neyon [erbon 17.7%], monuron, Nalco [borate + monuron], Ureabor and Chlorea [sodium chlorate + borate + monuron] applied in September > July > June. The increase in % vegetation control by replacing 1 annual treatment by 2 treatments at 50% single rate was: monuron 50%, Chlorea 50%, Ureabor 35% and simazine 15%.
Results with combined herbicides varied:- Weedazol [50% amitrol] 8 # had no synergistic effect on simazine 20 # or monuron 14 #; amitrol 5 # improved the initial control but decreased the residual effect of simazine or atrazine 20 #; the residual control of simazine or atrazine 20 # was not affected by dalapon 15 # but where the dominant weeds were Canada thistle [Cirsium arvense], wild carrot [Daucus carota], golden rod [Solidago spp.] and dandelion [Taraxacum spp.] it was markedly increased by 2,3,6-TBA + MCPA 12 #. The effectiveness of simazine 15 # + methoxy propazine 8 # applied in May > July. Excellent control of horsetail [Equisetum arvense] and couch grass [Agropyron repens] was given by the following compounds 2 years after application:- sodium chlorate 545 #, calcium nitrate 200 #, boron + sodium chlorate 375 #, erbon 124 #, amitrol 4.5 #, sodium chlorate 275 # + MCPA (ammonium salt) 1 #; control of A. repens only was given

by MCPA (ammonium salt) 1 # + TCA 45 # or dalapon 25 # or monuron 20 #, dalapon 37 # and monuron 20 #.
Other compounds tested included 2,4-D + boron, neburon, diquat and 3Y9. - M.E.L. [O.W.]

1003. CANADA. Canada thistle and perennial sowthistle. [13 Reports] Res.Rep.W.Sect. Nat.Weed Comm.Canada, 1959, 6-12, tabs.5.
Amitrol usually, but not always, gave better results than 2,4-D; in general it was the most promising treatment and cultivations some time after application enhanced its effect. Amitrol-T [amitrol + ammonium thiocyanate] gave similar results to equal rates of 2,4-D. Adding 1 # 2,3,6-TBA to 2,4-D 2 # did little to increase the latter's effect.
Canada thistle [Cirsium arvense]. Neburon applied when the weed was 4-6 in. tall had no effect < 8 #. At the full bloom stage 2,3,6-TBA 30 # eradicated the weed and 20 # gave 95% kill; it was less effective on 6 in. regrowth or at the bud stage. Amitrol-T 4 # + 2,4-D 4 # was no better than 2,4-D 8 #. When thistles were treated in early July (1) and again in early September (2) with MCPB 3 # (1) + sodium chlorate 100 # (2), 2,4-D 3 # (1) + sodium chlorate 100 # (2), amitrol 2 # + sodium chlorate 100 # (1), amitrol 2-4 # + amitrol 2 # (2) or + MCPB 3 # (2) or + 2,4-D 3 # (2) much less effective results were given than by amitrol 4 # (1) + cultivation after 3 weeks + amitrol 2 # (2) - the latter had given 96% control 1 year later. - L.K. [O.W.]

1004. CANADA. Perennial weeds. [15 Reports] Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 118-29, tabs.15.
Ranunculus spp. were reported as being much more susceptible to MCPA than to 2,4-D.
Cirsium arvense was better controlled by 3 successive annual applications of 1.5 # MCPB than amitrol.
Cichorium intybus - 2,4-DB (butyl) 1.5 # 1 week after lucerne harvest gave 90% control with only slight, temporary crop injury.
Solanum carolinense - 2,4,5-TP (ester) 3.5 # and amitrol 4 # applied in mid-July, ploughed and sown to wheat 3 weeks later gave 90% control.
Cyperus esculentus - EPTC disked in 1-2 days before sowing maize gave good weed control with moderate crop injury; HCA [hexachloroacetone] was equally effective on a sandy, but not on a muck, soil.
Convolvulus arvensis - when applied at the beginning of flowering excellent results were given by 2,3,6-TBA, good results by 1815 [MCPA + 2,3,6-TBA] 0.75-2.25 # and less satisfactory results by fenac 4 and 8 #, mecoprop 1.5-3 #, 2,4-D 1 #, 2,4,5-T 1 #, amitrol 4 #, 2,4-DB 2 # and 2,4,5-TP 1 and 2 #.
Asclepias syriaca - amitrol 6 # or 3 # + TIDE in June gave 88% kill, 6 # in June and August and in July of the following year gave > 99% kill.
Agropyron repens - good control was given by dalapon 8.5 # and amitrol 4 # with variable results from fenac 2 and 4 #; ca. 1 month later plots were ploughed and sown, dalapon and fenac injured white [snap] beans, maize and soybeans, while amitrol caused no injury. In lucerne dalapon 4 # in the summer caused temporary crop injury and eradicated the weed. Simazine and atrazine 4 # disked in before sowing to maize gave good control of couch and yellow and green foxtails [Setaria lutescens and S. viridis] and much increased yields; 1 cultivation 5 weeks after spraying improved results.
Euphorbia cyparissias was nearly eradicated by borates 9 lb/100 $ft^2$; this rate had little effect on St. John's Wort [Hypericum perforatum] or bladder campion [Silene cucubalus]. Euphorbia esula was eradicated by borates 1-2 lb/100 $ft^2$ with no to moderate grass injury. Fenac and 2,3,6-TBA gave promising results on E. esula and E. cyparissias while Urab [fenuron-trichloroacetate], Urox [monuron-trichloroacetate], Mylone [DMTT], amitrol, 1815 and mecoprop were less satisfactory. - L.K. [O.W.]

1005. CANADA. Other perennial herbaceous weeds. [5 Reports] Res.Rep.W.Sect.Nat. Weed Comm.Canada, 1959, 26-9, tabs.2.
Artemisia absinthium. Two successive annual applications of amitrol 4 # gave eradication as did one application of 8-14 #; 2,3,6-TBA appears to be as effective as amitrol. 2,4-D + 2,4,5-T was more effective than equal rates of 2,4-D, MCPA or 2,4,5-T.
Dandelion [Taraxacum officinale] - was eradicated by 2 sprays 3 months apart of 2,3,6-TBA 3 # or amitrol 4 #; for eradication from a single application much higher rates were required.
Centaurea repens. Trichlorobenzoic acid 5 # did not eradicate the weed; 10 # did but it also removed most of the brome grass in which it was growing. Polyborchlorate [73% borates + 25% chlorate] 3 lb/100 $ft^2$ killed Centaurea; there was some regrowth on plots treated with DB Granular [7.5% 2,4-D + borates] 3 lb/100 $ft^2$.
Field horsetail [Equisetum arvense]. In

all cases regrowth followed after amitrol 16 #, 2,4-D (isooctyl) 4 #, MCPA (ester) 4 #, polychlorobenzoic acid 24 #, 2,3,6-TBA 24 #, CP-1815 [MCPA + 2,3,6-TBA] 8 #, mecoprop 8 #, dalapon 24 + 2,4-D 4 #, diquat 8 #. The best treatments were amitrol and 1815. - L.K. [O.W.]

1006. BAKR, A.M. and ZAHRAN, M.K. (Cairo Univ.,Egypt). Control of broomrape (Orobanche) on horse bean Vicia faba. Bull. Cairo Univ.Fac.Agric., 1958, 204, 3-26, figs.

2,4-DES, 2,4,5-TES, chlorpropham and MCPB were applied to the soil in solution form in an attempt to control broomrape without injuring the horse bean. Promising results were given by chlorpropham 7.77 # applied once before anthesis of the horse bean, and by 3 applications of MCPB 4.37 # at 3 week intervals. - From Biol.Abstr.,Plant Sciences, 1960, 35,17214. - J.W.B.

1007. CANADA. Wild buckwheat. [4 Reports] Res.Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 62-4, tabs.1.

In flax CP-1815 [MCPA + 2,3,6-TBA] was slightly more selective than 2,4-D for the selective control of wild buckwheat [Polygonum convolvulus]. In 4 years trials no significant differences were found between 2,4-D, 2,4-DB, MCPA and MCPB (esters). In a comparison of MCPA (isooctyl), 2,4-D (butyl), 2,4-D (isooctyl), 2,4-D (oil soluble amine), 2,4-D (dipropylene glycol), 2,4-D (butoxyethanol), 2,4,5-T (propylene glycol butyl ether), 2,4-D (propylene glycol butyl ether), 2,4,5-TP (propylene glycol butyl ether), 2,4-D (butoxy ethanol invert), 100% kill was given at the 6-8 leaf stage by 0.5 # of the isooctyl ester of 2,4-D; treatment at the 1-2 leaf stage was inferior. Barbane 0.25-1 # at the 1-2 leaf stage was less effective than 2,4-D (ester) 0.3-0.5 #. - L.K. [O.W.]

1008. CANADA. (Exp.Farm,Swift Current, Sask.,Canada). Field bindweed and hoary cress. Res.Rep.W.Sect.Nat.Weed Comm. Canada, 1959, 24-5.

% Control in September of Convolvulus arvensis on sandy loam soil by TBA 20 #, polychlorobenzoic acid 40 # or 2,4-D (amine) 20 # applied in (a) May or (b) July was:- (a) 97.5%, 93%, 50%; (b) 98%, 97%, 99%. Other weeds controlled were red-root pigweed [Amaranthus retroflexus], lambs quarters [Chenopodium album], stinkweed [Thlaspi arvense], annual sowthistle [Sonchus sp.], tumbling mustard [Sisymbrium altissimum], sweet clover [Melilotus spp.], and burdock [Arctium sp.]. All treatments except 2,4-D in July failed to kill wild buckwheat [Polygonum convolvulus]. The control of Cardaria draba under crabapple trees by June treatments amitrol 12 # > amitrol + ammoniumthiocyanate 6 # > TBA 10 #. TBA slightly damaged the trees. Excellent control of C. draba in September resulted from chemical treatment in June under very dry conditions + cultivations in July using amitrol 9 #, amitrol + ammonium thiocyanate 6 #, sodium borate-trichlorophenylacetic acid complex 1 lb/100 ft², TBA (Trysben 200) 12 # and 2,3,6-TBA (sodium) 10 #. Control by fenac 10 # was incomplete. - M.E.L. [O.W.]

1009. CANADA. Biennial and annual weeds. [12 Reports] Res.Rep.E.Sect.Nat.Weed Comm. Canada, 1959, 130-40, tabs.9.

Spergula arvensis treated at the seedling stage in oats/red clover 3-4 weeks after sowing was well controlled by mecoprop 0.75 and 1.5 # and by diquat 0.5 and 1 #; unsatisfactory results were given by MCPA 0.5 # and CP-1815 [MCPA + 2,3,6-TBA] 0.5 and 0.75 # - only MCPA and the lower rate of mecoprop were sufficiently selective. Spraying with MCPA at the above stage gave somewhat better results than later spraying and less legume injury. MCPA 0.5 + 2,4,5-T 0.5 # gave good control of spurrey, nettle and other weeds with little injury to oats. Neburon 4 # was promising. Daucus carota in white clover was eliminated by 1 # 2,4-D or MCPA, or 2.5 # 2,4-DB while MCPB 4 # was poor. 2,4-D was more injurious to white clover than MCPA.

Hemp nettle [Galeopsis tetrahit] and dog fennel [Anthemis cotula] were well controlled by diquat 0.5 #. - L.K. [O.W.]

1010. CANADA. Other broad-leaved annual and biennial weeds. [11 Reports] Res.Rep. W.Sect.Nat.Weed Comm.Canada, 1959, 65-73.

Russian thistle [Salsola pestifer] and stinkweed [Thlaspi arvense] - delaying the sowing of wheat till mid-May gave >90% control and raised crop yield by ca. 30%.

Matricaria inodora. Atlacide [sodium chlorate] 3 lb/rod², monuron 12 # and amitrol 10 # failed to eradicate the weed.

Polygonum scabrum in fallow in the seedling stage was controlled better by 2,4-D (amine + citric amine) than by 2,4-D (ester), 2,4-DB (ester), MCPB + MCPA or CP-1815 [MCPA + 2,3,6-TBA] all at 1.5 and 2 #; in flax at the 3-leaf stage 2,4-D and MCPA (esters) 5 oz/ac and 2,4-DB 12 oz/ac were the best of the same

chemicals.

Polygonum persicaria. 100% kill was given by neburon 2-4 #, 2,3,6-TBA 1 + 2,4-D (butyl) 0.5 #, 2,4-D (butyl) 0.5 #; unsatisfactory results were given by mecoprop 0.5 #, CP-1815 0.5 # and MCPA (ester) 0.5 #.

Galeopsis tetrahit was eradicated by neburon 2-4 # and 2,3,6-TBA 1 + 2,4-D (butyl) 0.5 #; 2,3,6-TBA 1 # and CP-1815 were not satisfactory. In plots sprayed with a logarithmic sprayer when weeds were 4-8 in. high, atrazine, simazine, 2,3,6-TBA, and 2,4-D gave 100% control of Chenopodium album at 1.3, 0.5, 1.8# and 0.4-2.2 respectively, of Salsola pestifer at 2, 1.2, 0.3 and 0.9-2.4#, of Axyris amaranthoides at 0.7, 1.4, 0.2 and 1.6 #, Amaranthus graecizans at 2.5, 2.7, 1.8 and 2.6-3.4#, of Portulaca oleracea at 2.6, 1.9, 1.6 and 0.8-2.8#, of sweet clover [Melilotus alba] at 1.3, 0.5, 1.6 and 3.8 # and of Polygonum convolvulus at 1.3, -, 2.2 and 0.8 #. In other logarithmic plots MCPA, 2,4-D, MCPB and 2,4-DB were compared on Salsola pestifer, Axyris amaranthoides, Descurainia sophia, Monolepis nuttalliana, Solanum triflorum and others. Neburon 7 # was satisfactory on shepherd's purse [Capsella bursa-pastoris] and 5 # on spear-leaved goosefoot [M. nuttalliana]. Barbane 6 # did not give satisfactory control of Polygonum convolvulus, Chenopodium album, Thlaspi arvense or Salsola pestifer all 1-4 in. high. - L.K. [O.W.]

1011. CANADA. Leafy spurge and toadflax. [13 Reports] Res.Rep.W.Sect.Nat.Weed Comm. Canada, 1959, 13-23, tabs.7.

The control by 1959 of (a) Euphorbia esula, (b) grasses in aspen (Populus tremuloides) on sandy loam soil given the following treatments/100 $ft^2$ in April 1958 was: BDM (borate + 2,4-D) 2 lb (a) 95%, (b) 100%; borax 4 lb (a) 99%, (b) 95%; sodium metaborate 93% + MCPA 5% + monuron 2% 2 lb (a) 95%, (b) 99%; sodium metaborate 95% + MCPA 5% 2 lb (a) 100%, (b) 90%, BMM [C.C.519] (borate + monuron) 2 lb (a) 90%, (b) 80%; 2,4-D 6.9% + dalapon 9.4% + monuron 1.6% 1 lb (a) 95%, (b) 80%; monuron 13% + 2,4-D 8% 1 lb (a) 95%, (b) 99%; 2,4-D 5% + dalapon 7% 1 lb (a) 95%, (b) 75%. Two applications of dalapon 20 # in each of 1958 and 1959 gave (a) 100%, (b) 100% but slightly damaged the aspen. The % control in October 1959 of (a) Linaria vulgaris, (b) E. esula and (c) the % regrowth of grasses given the following treatments/100 $ft^2$ in June 1956 was: BMM 2 lb (a) 100%, (b) 100%, (c) 0; Gerstley borate (33% $B_2O_3$) 8 lb (a) 100%, (b) 95%, (c) 95%; BDM 2 lb (a) 100%, (b) 100%, (c) 150%; Borax 2 lb or 4 lb (a) 99%, (b) 100%, (c) 125% (2 lb), 75% (4 lb). BMM did not eradicate Symphoricarpos occidentalis and Rosa sp. Concentrated borascu (borates) or BDM at 3 lb/100 $ft^2$ in June 1958 + tillage in August 1958 gave 100% control of L. vulgaris. September 1959; wheat sown in 1959 died out after emergence. Autumn applications of borax or BDM were more efficient than spring applications for the control of both weeds. The % control in September 1958 of L. vulgaris following treatments in April 1958 was: monuron 22% + TCA 200 # 55%, monuron 13% + 2,4-D 8 % 217 # 70% and dalapon 9.4% + 2,4-D 6.9% + monuron 1.2% 217 # 80%; the control of grasses in 1958 and 1959 was 100% in the dalapon + 2,4-D + monuron plots and 60-90% in the other plots. The following treatments in July 1958 gave good control of E. esula 1 year later, amitrol 4 #, amitrol + ammonium thiocyanate 4 #, 2,3,6-TBA 10 # and polychlorinated benzoic acid 12 #, and 2,4-D 24 # + 2,4-D 1.5 # little or no control was given by 2,4-D (iso-octyl ester) 4 #, MCPA (propylene glycol butyl ether ester) 4 #, chlorinated benzoic acid + cresoxyacetic acid 4 #, mecoprop 8 # and diquat 8 #. Initial applications of 2,4-D (butyl ester) 8 # in 34 gal in 1957 + following treatments of 1.8-5.0 # in 1957-1959 gave 100% control of E. esula; a low volatile ester was more efficient than the butyl ester. The control of E. esula and Agropyron repens on sandy loam soil by amitrol 20 # in 34 gal in 1957 + follow-up spraying 4-20 # in 1958 was not improved by tillage; initial spraying in July was more efficient than in June. The effectiveness of autumn treatments of L. vulgaris and A. repens + brome grass [Bromus sp.] & native grasses with amitrol 20 # in 34 gal > spring treatments and of follow-up treatments, June > May and August > July. The control (100%) of L. vulgaris in autumn 1959 by amitrol 8 # in July 1958 + tillage > amitrol alone; yield of wheat sown in 1959 was not affected. Initial treatments in September, 1958 of 20 # in 34 gal + follow-up treatments in 1959 at the given rates, gave 100% control of L. vulgaris on silty clay loam: erbon 2 x 8.5 #, 2,4-D (ester) 6 #, 2,4-D + 2,4,5-T (esters) 2 x 4 #, 2,4,5-T (low volatile esters) 2 x 1 # and TBA 2 #; chlorinated benzoic + cresoxyacetic acids 6 # initially 1958 + 2 x 2.2 # 1959 gave 100% control. Experiments on rotation practices and cultural treatments of fallow and stubble over 6 years showed that three or two years' rotation + good tillage during the fallow period eradicated L. vulgaris. - M.E.L. [O.W.]

1012. ZANARDI, D. Prove di diserbo dell'Erba medica contro la Stellaria. [Trials for the control of Stellaria in lucerne.] Notiz.Mal.Piante, 1959, 49/50, 36-41, (It.e.), bibl.11.
When applied on February 5th to lucerne stubble monuron and diuron both at 1 and 2 kg/ha gave excellent control of Stellaria media without injury to lucerne, the higher rate giving 100% control. Mecoprop 3.5 and 7 kg/ha and amitrol 2 and 4 kg/ha controlled S. media but injured the lucerne. The following gave no control: 2,4-D (amine) 1.5 kg/ha, TCA (90%) 1.5 kg/ha, neburon 1 kg/ha, ammonium isobutyl phenol 4 kg/ha and 2,4-D (ester) 1 kg/ha; 2,4-D (ester) injured the lucerne. All compounds except neburon, ammonium isobutyl phenol and 2,4-D (ester) completely controlled Capsella bursa-pastoris. - D.M.L.S. [64(45)]

1013. ZANARDI, D. Ancora sul diserbo dei vigneti con ATA ed ureici. [More on weed control of vineyards with amitrol and ureas.] Notiz.Mal.Piante, 1959, 49/50, 8-13, (It.e.), figs.1,bibl.14.
Applied in May to dense weed growth consisting mainly of Agropyron repens, Cynodon dactylon, Glechoma hederacea, Erigeron canadensis, Senecio vulgaris, Carduus spp. and Daucus carota, amitrol 4 and 6 kg/ha gave excellent weed control at both rates; slightly better results were, however, obtained from the higher rate and on plots given a repeat dose 5 weeks later. Only Convolvolus arvensis was resistant. Monuron and diuron at 4 and 6 kg/ha were much less effective and neburon 4 and 6 kg/ha ineffectual. No compound caused injury to adjacent vines vars. Regina, Chasselas, Barbera and Croattina. - D.M.L.S. [65(45)]

1014. SWINBANK, J.C. (Univ.,Nebraska, U.S.A.) Ragweed control. Crops & Soils, 1960, 12,(7),26-7.
Perennial ragweed [Ambrosia psilostachya?] can be controlled satisfactorily by spraying with 2,4-D (ester) 1 # in June or early July (when plant is actively growing), for 2 or 3 consecutive years. - J.W.B. [O.W.]

1015. SCHREIBER, M.M. (Ithaca, N.Y., U.S.A.) Silvex controls bedstraw. Crops & Soils, 1960, 12,(6),27.
2,4,5-TP (ester) 2 # or (amine) 4 # applied in 30 gal water/ac in early spring gave good control of bedstraw [Galium spp.]; the first harvest of birdsfoot trefoil was reduced by the treatments but later cuttings produced normal yields. - J.W.B. [O.W.]

1016. UNITED STATES. Kill cockleburs early. Crops & Soils, 1960, 12,(6),28.
In flax, cockleburs [Xanthium spp.] < 6 in. high can be killed by MCPA 0.25 #; in small grain or maize, 2,4-D (amine) 0.5 # gives good control; both these treatments prevent the weed from producing seed. Cockleburs at later stages of growth can be stunted by 2,4-D or MCPA 0.5 #. - J.W.B. [O.W.]

1017. JOGLEKAR, R.G., HARDAS, M.G. and DESHMUKH, N.Y. (Agric.Res.Inst.,Nagpur,India). A short note on the control of weed Striga. Ind.J.Agron., 1959, 4,(2),114-7, tabs.2, bibl.5.
Previous work on this weed is briefly reviewed. Striga euphrasioides 5-9 in. tall was sprayed in September with 2,4-D (sodium) and (ester) at 1 and 1.5 # a.e. The weed was susceptible to both formulations but the ester caused a more drastic and quicker effect.
2,4-D (sodium, (ester) and (amine) and MCPA (sodium) were applied in August at 0.5, 0.75, 1.0 and 1.25 # to determine their residual toxicity to Striga lutea. All the herbicides were found to remain effective against this weed for 50-60 days after application, with 2,4-D (ester), even at 0.5 #, being the most toxic; higher concentrations of MCPA (sodium) were more effective than those of 2,4-D (sodium) and (amine). - J.W.B. [O.RE.]

1018. HOLZ, W. and RICHTER, W. (PflSchAmt., Oldenburg,Germany). Versuche zur mechanischen Bekämpfung des Duwocks. [Experiments on cultural control of marsh horsetail.] LandwBl.Weser-Ems, 1960, (9), pp.2, figs.3,tabs.1.
Pulling a duckfoot cultivator 20-30 cm under the ground appeared to prevent regrowth of marsh horsetail [Equisetum palustre] the same year and to give excellent control the following year; however, there was considerable regrowth in the next year. The sward suffered considerable injury in 2 dry years, but none in a wet year. - L.K. [219(43)]

1019. HOLMES, R.H. Ragwort ... cow killer. Fmr & Stk-Breed., 1960, 74,(3674),111, figs. 1.

The following treatment has given good results for the control of ragwort [Senecio jacobaea]: graze the field but remove stock before any ragwort eaten; spray; when ragwort regrowth in bud, cut and burn and respray in August. A mixture of MCPA and 2,4-D is reported to be especially effective. L.K. [O.W.]

1020. CANADA. Corn. [16 Reports] Res. Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 9-23.

Results of trials using simazine on maize:- 2 # at planting or at emergence (var. Dekalb 240) gave good weed control; packing did not improve weed control obtained with 1 # pre-em.; 3 # without cultivation, or with cultivation to within 6 in., or 1 in. of the row had no effect on maize yield. 0.25 # in 10 or 30 gal water/ac applied 7 days after planting gave excellent control of lamb's quarters [Chenopodium album] and wild buckwheat [Polygonum convolvulus], 0.5 # controlled red root pigweed [Amaranthus retroflexus], but 1 # did not control foxtails [Setaria spp.]; cultivation to reduced width resulted in better yields than conventional cultivation, but both were superior to overall or band spray treatments with no cultivation. 0.5 to 20 # a.i. was applied in May to a fallow soil of Guelph loam to determine average residual concentration between (1) 0-1, (2) 1-2, (3) 2-4 and (4) 4-6 in. soil layers after certain periods; 47 days after application an overall average of 44.8% simazine was present; 96 days after application the average was 34.9%, ranging from 35%-11% at depths (1) to (4) where 0.5-2 # had been applied, and 77%-2% where 6-20 # had been applied; 1 year after application 6.3% simazine was present in plots treated with 0.5-2 #, and 10.2% in those treated with 6-20 #. Simazine at the higher rates gave good control of twitch grass [Agropyron repens].

In a greenhouse experiment, simazine approximately 0.8 # a.i. was applied to lamb's quarters (with 2-12 leaves at least 0.5 in. long), pigweed, and barnyard grass [Echinochloa crusgalli]. Dry matter yield data showed all the weeds became more resistant with age and nearly all those treated at 2-leaf stage died.

Simazine and atrazine were equally effective on couch [Agropyron repens] and foxtails when (1) 2 # applied before, and 2 # after ploughing and (2) 4 # applied after ploughing and disked in ± an additional 1 # applied immediately after ploughing, but results showed that better weed control was obtained by (2) although the additional 1 # did not improve control.

Pre-em. treatments consisting of 2 normal cultivations + 2,4-D + simazine 2 #, and 2 cultivations to reduced width ± either simazine 2 # or atrazine 2 #, resulted in higher maize yields than (2 normal cultivations ± 2,4-D) ± atrazine, 2 normal cultivations + simazine 2 #, cultivations without spray and vice versa, 2,4-D + simazine 2 #, or ± atrazine 2 #, and 1 cultivation at lay-by ± simazine, or ± atrazine.

Atrazine 0.5, 1 and 2 # post-em. was applied approximately 2-4 weeks after planting maize. 7-8 weeks after treatment 100% control of all weeds was given by 2 # and 65% by 0.5 #; at harvest time lamb's quarters, lady's thumb [Polygonum spp.] and wild buckwheat were completely controlled, but control of Panicum capillare was 93%-40% for 2-0.5 # respectively, for foxtail 90% and 75% at 1 and 0.5 #, for ragweed [Ambrosia artemisiifolia] 95% and 75% at 1 and 0.5 #, and for pigweed 81% at 0.5 #.

EPTC 2 # gave very good control of Canada thistle [Cirsium arvense], lamb's quarters, and tufted vetch [Vicia spp.] 4 # good control of annual grasses, and 6 # of redroot pigweed; 6 # disked in reduced couch by 60%, and 5 # disked in gave 94-7% control of Cyperus esculentus; 4-6 # disked in gave very good control of Equisetum arvense. At 1 site 4-6 # caused 50% of maize to be stunted and yellowed - although in this case damage may have been caused by drilling the plots immediately after spraying and cultivating.

Maize yields were not reduced by pre-em. CDAA 8 # + 2,3,6-TBA 1 #, simazine 2 # or 2,4-D (amines) 1.5 #; the latter at 0.75 # applied when maize was 6-8 in. high depressed the yield, although presence of couch may have caused this. No control of couch was obtained, but buckwheat was controlled by 2,4-D (amine) 0.75 #.

Pre-em. hexachloroacetone 6.86 # and post-em. amitrol 0.5 # significantly reduced maize yield as a result of crop injury; pre-em. ipazine and trietazine 0.5 # significantly reduced the yield as a result of poor weed control.

Good results for weed control and maize yield were given by pre-planting and pre-em. simazine spray at 2 #, but not by granular simazine. EPTC caused injury at 5 # pre-planting and depressed yields. Pre-em. atrazine 2 # and fenac 1 and 2 #

gave good results for weed control and yield and post-em. atrazine 2 # and dinoseb (amine) 1.5 # were both fairly successful. MCPB 1.5 # and CP-1815 [chlorinated benzoic acids + cresoxyacetic acids] 0.56 # post-em. and granular 2,4-D 0.2 # gave poor weed control, causing yield reduction.

2,4-DB (ester) 1 # slightly damaged maize (var. Pioneer) when 24 in. high, and 1.5 # caused moderate damage when the maize was 6-10 in. high. Good control was obtained of ragweed, and redroot pigweed by MCPB 1.5 #, and moderate control by 2,4-DB 1 #. Fenac 2 # pre-em., EPTC 4 # pre-em., dinoseb (amine) 4 # post-em. and amitrol 1 # post-em. damaged maize to some extent, the fenac and EPTC damage persisting longer. J.W.B. [O.W.]

1021. WURGLER, W. (Stas.Fed.Essais Agric., Lausanne, Switzerland). Eradication of Veratrum album in alpine pastures. Landw. Jahrb.Schweiz, 1958, 7, 485-90.

Spraying with the butyl or butoxyethyl esters of 2,4-D or 2,4,5-T when the weed was 10-30 cm tall was very effective and did not injure white clover. - L.K.

1022. CANADA. Weeds of industrial sites. [6 Reports] Res.Rep.W.Sect.Nat.Weed Comm. Canada, 1959, 79-82, tabs.5.

Good vegetation control for 50-60 weeks on railway ballast resulted from May applications of simazine 10 #; atrazine 10 #; simazine 5 # + amitrol 2.5 #; simazine + 2-methoxy-4,6-bis(isopropylamino)-s-triazine 2.5 #; SC (Chlorax) 144 #. Results with SC (Atlacide) 150 # and SC 60 # + simazine 2.5 # or SC 60 # + monuron 4 # were poor.

The % weed control in September on industrial sites following spring applications of herbicides was:- simazine (granular) 20 # + 2,4-D 50 # 35.2%, mainly of broad leaved weeds; atrazine (granular) 20 # 78.6%, mainly of grasses; monuron-borate mixture (Ureabor) 32 #, 77.3%, mixed; pellets of monuron 32 # + 2,4-D, 88.6%, mainly broad leaved weeds.

In spring 1958, herbicides were applied to the following Prairie sites:- (a) heavy clay sub-soil, top-soil removed, predominant weeds Equisetum sp., Taraxacum sp. and perennial grasses; (b) clay soil with Agropyron repens; (c) fertile clay loam, with A. repens, Cirsium arvense, and Sonchus sp. The % remaining growth by June, 1959 was simazine 20 #, (a) 16.3, (b) 2.3, (c) 2.6; atrazine 20 #, (a) 4.1, (b) 0, (c) 4.0; simazine 5 # + 2-methoxy-4,6-bis (isopropylamino)-s-triazine 10 # (a) 7.6, (b) 0.5, (c) 17.8; monuron 16 # (a) 23.1, (b) 0.2, (c) 3.2. By September, 1959, control of C. arvense, Sonchus sp., Equisetum sp. and Taraxacum sp. had been lost. Addition of 2,3,6-TBA and MCPA to simazine or atrazine improved the initial and residual control of broad leaved weeds and Equisetum on (a) and (c); atrazine 10 # + acids (2,3,6-TBA + MCPA) 12 # gave 99.1% control of C. arvense and Sonchus sp. on site (c) by September, 1959. The effectiveness of simazine + dalapon or amitrol > simazine alone and of atrazine + amitrol or dalapon < atrazine alone.

The % control of vegetation by simazine 20 # applied in October, 1958 was 100% in July, 1959 and 99% in October, 1959; atrazine 20 # in October, 1958 had lost control by July, 1959.

The % control of vegetation on parking areas in September, 1959 following applications in April, 1957 were: CBM (chlorate-borate mixture) 8 lb/100 $ft^2$, 99%; BMM (borate-monuron mixture) 4 lb/100 $ft^2$, 100%; fenuron 50 #, 95%; monuron 50 #, 99%.

The most effective and inexpensive control of mixed grasses (mainly Alta fescue) and broad leaved weeds along fence lines was given by amitrol 4 # + dalapon 5 #. Results with amitrol 4 #, dalapon 10 # ± amitrol 2 # were inferior. - M.E.L. [O.W.]

1023. CANADA. Cereal crops and corn. [11 Reports] Res.Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 83-7.

Varieties of wheat (a. Thatcher, b. Saunders, and c. Selkirk), of barley (d. Gateway, e. Husky, and f. Olli), and of oats (g. Eagle, h. Larain, and i. Rodney) were treated at (1) 1.5-2 leaf stage and at (2) 3 to 5 leaf stage, with barbane 0.5 and 2 #; 0.5 # at stage (1) did not affect yield of a, b, d, e or f, yield of c was reduced by nearly 10%, and yield of g, h and i 70% or more; 0.5 # at stage (2) did not affect yield of d or h, yield reduction of a was 25%, of b 18% of c 10%, of e 15%, of f 30%, of g 55%, of i 37%; 2 # at stage (1) and (2) reduced the yield of a, b and c by at least 45%, and at stage (1) reduced d and e by 15%, and at stage (2) reduced yields of d, e and f by at least 60%.

CP-15336 [2,3-dichloroallyl diisopropylthiolcarbamate] and EPTC 2, 4 and 6 # pre-em. gave 89-92% and 86-91% control of wild oats in wheat. CP-15336 gave 50% control of broad leaved weeds at all rates, and EPTC 73% control at 6 # and 59% at 2 #. EPTC 2-6 # gave 45-80% control of Setaria viridis. Wheat was very susceptible to both chemicals at all rates used.

Neither simazine nor atrazine pre-em. at 2, 3 and 4 # in 14 gal water appeared to affect germination or growth of sweet corn, or to control broad leaved weeds or Setaria viridis. This was thought to be due to the unfavourably dry season, as in 1957, simazine at 2 and 3 # gave 85-100% control of all weeds.

CP-15336 and EPTC were applied pre-em. at 2, 4 and 6 # in 14 gal water to maize; no damage was observed at germination but 10 days after emergence considerable damage began to show in all treated plots, that from CP-15336 being less severe. Damage consisted of twisting of stalks and fading colour in the leaves and stalk, and after 2 weeks the affected plants died. CP-15336 gave 81-86% control of wild oats and EPTC 77-91%. Neither chemical was effective against broad leaved weeds. EPTC 2 to 6 # gave 57-80% control of Setaria viridis, while CP-15336 2-6 # gave only 32-50% control.

The following chemicals were applied to maize as (a) pre-em., (b) post-em. 6 in. high, and (c) post-em. 10-12 in. high treatments:- Randox [CDAA] 4 and 8 # (a); CP-15336 4 and 6 # (a); simazine 2 and 4 # (a); Emid [2,4-D (amide)] 2 and 4 # (a); Chlorazine (2-chloro-4,6-bis(diethylamino)-s-triazine) 2 and 4 # (a); atrazine 2 and 4 # (a); Niagara 4562 (N-(3,4-dichlorophenyl)-2-methyl pentanamide) 3 and 6 # (a); Niag. 5996 (2,6-dichlorobenzonitrile) 2 and 3 # (a); simazine + dinoseb 2 + 8 # (a); 2,4-DB (butyl ester) 1 and 1.25 # (b) and (c); Geigy 30031 [ipazine] 2 and 4 # (b) and (c); 2,4-D (butyl ester) 0.25 and 0.5 # (b) and (c); Diax (2,4-D (isopropylamine) + citric acid) 0.5 and 0.625 # (b) and (c); ACPM 542 (amitrol + simazine) (0.5 + 1.5) and (2 + 4)# (b) and (c); Fisons 1815 (2,3,6-TBA + MCPA) 0.375 # and 0.5 # (b) and (c). Overall weed control with pre-em. applications was poor, the corn yield corresponded closely to the intensity of weed infestation. Only ACPM 542 with treatment (b) showed any injury to the maize, but with treatment (c) onion-leaf was a prominent symptom especially on plots treated with Fison 1815, Diax and 2,4-D (esters); this did not affect the yield, which was 0.5 ton/ac higher than on the plots receiving treatment (b). ACPM 542 bleached maize foliage white, but recovery was very rapid; this was the only herbicide of those tested which gave satisfactory weed control. Prevailing weeds were Setaria viridis, Amaranthus retroflexus, Thlaspi arvense and Polygonum convolvulus.

Five varieties of maize (De Kalk 65, Pioneer 383, Warwick 303, 311 and 401) were treated with monuron 2 #, dinoseb 3.5 #, EPTC 3 and 6 #, and simazine 2 and 4 #. Treatments did not significantly affect maize yields; varieties did not react differently except that De Kalk 65 was more susceptible to EPTC than the others.

MCPB (sodium) at 0.75 and 1.125 # showed no effect on maize (varieties F.M.Cross, Hybrid 270 and Seneva Golden) when applied when the crop was 4 to 12 in. high, 1.5 # showed no effect on F.M. Cross (in 1 experiment) or Hybrid 270 applied at the same stage of growth, but 1.5 # applied to F.M. Cross and Seneva Golden showed slight damage. MCPB (sodium) 0.75 to 1.5 # gave slight to good control of Amaranthus retroflexus; Polygonum spp. was only slightly affected by, and P. persicaria was resistant to, all rates of MCPB. - J.W.B.
[O.W.]

1024. INDONESIA. Alang sebagai lawan dan kawan. [Alang-alang grass as adversary and friend.] Menara ebunan, 1960, 29, (2),23, 25-7, (Indonesian,e.).
Imperata cylindrica. [O.W.]

1025. WELLHAUSEN, H.W. Johnson grass control. Ext.Leafl.Arkans.agric.Coll., 1958, 250,pp.6.

Johnson grass [Sorghum halepense] can be selectively controlled in cotton by pre-planting dalapon 15 # when the grass is 6-8 in. high, or 2 applications of 5 #.

The following spot treatments can be used in susceptible crops: repeated treatments with a 50/50 mixture of naphtha and diesel fuel oil applied to the lower 0.25 in. of stem when grass is 6 in. high; spray entire plant 2 or 3 times when < 6 in. high with dalapon 0.2 lb in 1 gal water; apply dry sodium chlorate to cover the soil surrounding the base of the grass (plants adjacent to treated plants will also be killed). - J.W.B.
[O.W.]

1026. CANADA. (Exp.Fm,Beaverlodge,Alta, Canada). Couchgrass. [8 Reports] Res.Rep. W.Sect.Nat.Weed Comm.Canada, 1959, 1-5, tabs.7.

Monuron - spring treatments gave more effective control of Agropyron repens than autumn. Cultivation before or after treatment tended to reduce residual effect. 40 # in 1 instance prevented invasion for 7 years; in another, it failed to eradicate couch but recovery was very slow.

Fenuron - gives about the same initial kill as monuron but the residual effect is much less enduring. 80 # is necessary for

eradication, but reinvasion is rapid.
Dalapon - 12 # (6 + 6 #) + 3 cultivations gave 95% kill.
EPTC - rates up to 15 # + 2 diskings gave no more than 65% control.
TCA (50 and 100 #) and fenac (sodium) (15 and 30 #) - Both gave nearly complete control at both rates when followed by rototilling 4 weeks later but were much less effective without rototilling. Fenac 5 # was less effective.
Cacodylic acid (5-30 #) ± rototilling was unsatisfactory.
Amitrol, TCA and Dalapon (1-10 #) - 1 treatment + 2 cultivations gave better results than 3 treatments without cultivation.
2,3,6-TBA - when applied after mowing, 5 # twice in the first year (I) and 3 times in the following year (II) or 7 # once in (I) and twice in (II) gave 100% control.
Amitrol - when applied after mowing, the following gave 100% control:- 5 # once in (I) and 3 times in (II); 3.2 # once + cultivation in (I) and 3 times in (II); 0.6 # + cultivation in (I) and 3 cultivations in (II); 12 # twice in (I) and (II).
Both TBA and amitrol were less effective when couch was not mown before treatment. - D.M.L.S. [O.W.]

1027. ROZSNYAY, Z. (Univ., Göttingen, Germany). Neue Möglichkeiten bei der chemischen Unkrautbekämpfung im Walde. [New possibilities of chemical weed control in forestry.] Forst u.Holzwirt, 1960, 15,(4), pp.2, (G.), tabs.1,bibl.
To afford control for 2 years the following amounts (in kg/ha) of dalapon and TCA respectively are said to be necessary: Calamagrostis epigeios 20-25, 100-150; Holcus mollis and H. lanatus 15-20, -; Agrostis vulgaris 15-20, -; Aira caespitosa and A. flexuosa 10, 50-100; Juncus spp. 10, -; Molinia caerulea 10, 100; Brachypodium sylvaticum 10, 100; Melica uniflora 5,100. Calamagrostis is said to be more susceptible in late April and early June. - L.K. [223(43)]

1028. * FUCHIGAMI, T. and YOUNGNER, V.B. Crabgrass control tests - 1959. Sth.Calif. Turfgrass Cult., 1959, 9,(4),32.

1029. CANADA. Other annual grasses [6 Reports] Res.Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 58-61.
Setaria viridis control: I with TCA: in flax (1) 2 in. high and (2) 5 in. high 3 and 6 # in 7 gal water/ac gave 71% and 78% control respectively at (1) and 84% and 93% at (2); in flax 4-8 in. high 1, 2 and 4 # in 10 gal water/ac suppressed the weed to the point where it was drying up and no longer competing with the flax; 1.5 and 3 # in 12 gal water/ac gave 58% and 72% control in oats, and 54% and 80% in barley, (both crops at 4-leaf stage); II with dalapon:- in flax (1) 2 in. and (2) 5 in. high 0.75 and 1.5 # in 7 gal water/ac gave 52% and 77% control respectively at (1) and 85% and 89% at (2); in flax 4-8 in. high, 0.25, 0.5 and 1.0 # in 10 gal water/ac suppressed the weed - (see above); III with monuron:- in flax (1) 2 in. and (2) 5 in. high, 0.75 and 1.5 # in 7 gal water/ac gave only 5% and 20% control respectively at (1), and 20% and 36% at (2); IV with diuron at these rates gave similar results; V 2,4-D (butyl ester) 1.0, 2.0 and 4.0 # a.e. and 2,4-D (butoxy ethanol ester) 2.0 and 4.0 # a.e. when applied pre- and post-em. to wheat suppressed the weed to the point of no seed production, and reduced the yield of wheat.
The following chemicals had no effect on Setaria viridis:- neburon 1 and 2 # post-em. in flax; barbane, fenac (2,3,6-trichlorophenylacetic acid), and Trysben [2,3,6-TBA] each at 0.25, 0.5 and 1.0 # a.e. post-em. in wheat; 2,4-D (butyl ester) and (butoxy ethanol ester) 0.5 # a.e. pre-em. in wheat; EPTC, amiben (3-amino-2,5-dichlorobenzoic acid), and barbane, each at 0.25, 0.5 and 1.0 # post-em. in flax.
In an experiment to measure the influence on flax yield of Setaria viridis density, the following results were obtained:- weed free plots - 14.6 bushels/ac; 10 plants/ft$^2$ -6 bushels/ac; 50 plants/ft$^2$ - 5 bushels/ac; 300 plants/ft$^2$ -5 bushels/ac; 600 plants/sq. ft - 4 bushels/ac.
Amiben, EPTC and dalapon at 0.25, 0.5 and 1.0 # a.e. and TCA at 1, 2 and 4 # a.e. were applied when Lolium persicum was in the 3-5 leaf stage and flax 4-6 in. high; no treatment gave satisfactory results, but all rates of amiben and TCA, and the higher rates of dalapon caused some supression of the weed; flax yield was increased with TCA and amiben treatments. - J.W.B. [O.W.]

1030. BARA, S. Estudios sobre la eliminacion del Cyperus rotundus L. por herbicidas. [The control of C. rotundus by means of herbicides.] Commun.Inst.For.Invest.Exp., Madrid, 1959, 30,(8), pp.17, (Spanish,spanish), bibl.18.
Presents the preliminary results of experiments in the control of C. rotundus in the forest nurseries of the Lourizan Forest

Research Centre. Economical and efficient herbicides were found in the following: (1) NaF + $NH_4SCN$ and (2) NaF + 2,4-D. Repeated applications of (2) are recommended, both as a pre-em. treatment and at time of flowering at 30 + 0.5 kg/ha. - For.Abstr., 21, 1959.

1031. UNITED STATES. Rep.Monsanto Chem. Co., (n.d.), pp.42, tabs.
Consists of numerous brief reports on preliminary tests with Avadex [2,3-dichloroallyl diisopropylthiolcarbamate] for the control of wild oats [Avena fatua] and green foxtail [Setaria viridis] in barley, flax, sugar beets, sunflower, rape, carrots*, corn, cucumbers*, dry beans*, green beans*, mustard*, peas*, potatoes*, red beets*, and wheat. Conflicting results were obtained on wheat and maize and promising results on all other crops (however, only 1 trial was carried out on *). - L.K. [O.W.]

1032. CANADA. Wild oats - chemical. [42 Reports] Res.Rep.W.Sect.Nat.Weed Comm. Canada, 1959, 33-57, tabs.21.
The following chemicals were tested for wild oat control in various crops:- 2,3-dichloroallyl diisopropylthiolcarbamate (1), barbane (2), EPTC (3), 2,3,6-trichlorophenylacetic acid (4), 2,6-dichlorobenzonitrile (5), simazine (6), 1,2,4,5-tetrachlorobenzene (7), chlorpropham (8), propham (9), CDAA (10), TCA (11), atrazine (12), trietazine (13), O-2,4-dichlorophenyl O-methyl isopropylphosphoroamidothioate (14), and 2 coded compounds. The table below shows the results obtained with pre-planting (a), pre-em. (b) and post-em. (c) treatments:-

| Crop | Control: very promising | fairly promising | poor |
|---|---|---|---|
| wheat | 5c. | 1b,2a,2c, 3b,(2 + MCPA)c, (2 + 2,4-D)c, 14a. | 1a,3a, 4a,5a, 6a,7a, 8a. |
| barley | 5c,8a. | 1a,2a,2c, 5a. | 3a,4a, 6a,7a. |
| oats | | 2c. | |
| flax | 6a. | 1a,3a,5a, 8a. | 5c,7a. |
| rape | | 1a,3a,5a, 8a,14a. | |
| sugar beet | 1a,3a,9a, 10a,11a. | | |
| maize | 1a. | 3a. | |
| sunflower | 1a,3a. | | |
| potatoes | 1a,3a. | 13a. | 6a,12a. |
| beets | 1a. | 3a. | |
| beans | 1a. | 3a,5a. | |
| peas | 1a. | 3a,5a,13a. | 6a,12a. |
| carrots | | 1a,3a. | |
| cucumbers | | 1a. | 3a. |
| mustard | | 1a. | 3a. |

- J.W.B. [O.W.]

1033. * ENGE, G. [The wild oat problem in Kalmar province.] Kalmar Läns Norra Hushållsk.Kvrtlskr., 1959, 19,(1),11-2.

1034. CANADA. Wild oats - cultural and cropping. [4 Reports] Res.Rep.W.Sect.Nat. Weed Comm.Canada, 1959, 30-2.
Wheat sown on April 27th and with an infestation of 23.9% wild oats [Avena fatua] yielded 19.0 bushels/ac, while that sown on May 20th with 2.3% wild oats yielded 33.2 bushels/ac. Results obtained in 1959, showed autumn tillage on both barley plots and stubble land to be more effective than spring, cultivation in late September or early October giving the best results.
Ammonium nitrate at 110# was broadcast on 2 stubble strips on April 22nd, they were cultivated on April 30th, and again cultivated and harrowed before seeding oats on May 15th. 1612 wild oat plants/$yd^2$ were found on the fertilized strips on June 5th, and only 304 on the unfertilised strips. Tests showed seed from fertilised strips to have a viability of 88.7%, and that from unfertilised strips 97.1%. - J.W.B. [O.W.]

1035. CANADA. Woody plants. [2 Reports] Res.Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 76-7.
Control of crested wheat grass [Agropyron cristatum] growing under ash trees was given by dalapon 15 # (excellent, but Taraxacum spp. increased), dalapon 15 # + amitrol 8 #, amitrol 12 # (but regrowth occurred after 12 months); amitrol + ammonium thiocyanate 4 # gave some control. Severe injury to ash occurred with dalapon 20 # (in dry weather the injury was not apparent until after heavy rain) and with dalapon 15 # + amitrol 8 #. Dalapon 15 # or amitrol 8 # did not injure spruce.
Tests in June 1958 on the eradication of Caragana 12 ft high showed the effect of 2,4,5-T (isooctyl ester) 4 # in 100 gal > 2,4-D (butoxy ethanol ester) 4 # in 100 gal; better results were obtained by spraying entire plants than by spraying 1 ft stumps with regrowth. By autumn 1959 new shoots appeared at the base of the uncut plants. Dalapon 60 # in 100 gal gave complete kill with no regrowth by autumn 1959. AMS 50 # in 100 gal and soil treatments with 2,4-D (granular) 8 # and fenuron (pellets) 6 # were ineffective.
In brush control experiments on sandy loam soil Dybar (25% fenuron) was applied in mid-June, mid-July and mid-September. By mid-September rates of 48-64 # gave good brush control and caused severe injury to grasses; 16 # and 32 # injured both brush and grasses. Rainfall was slightly above normal. Species present were:- Prunus melanocarpa, Corylus cornuta, Amelanchier alnifolia, Quercus sp., Crataegus sp., Populus tremuloides and P. taeamahacca. - M.E.L. [O.W.]

Noted

1036N. CANADA. Cultural control of wild oats. Publ.Canad.Dep.Agric., 1959, 1044, pp.14, figs.2, tabs.4. [227(71)]

## CHEMISTRY, PHYSICS, TOXICOLOGY, RESIDUES AND SOILS

See also 926, 940N, 1056, 1105.

1037. SANDERS, H.J. and PRESCOTT, R.F. (Dow Chem.Co., Midland, Michigan, U.S.A.) 2,4-D (2,4-dichlorophenoxyacetic acid) weed killer and derivatives. Industr.Engng Chem., 1959, 51, 974-80, figs.9, tabs.1, bibl. 15.
A review of the development of, and early research on 2,4-D is given. Since 1952, the annual production in the United States has varied from 25-35 000 000 lbs. Various methods of manufacture are mentioned briefly and a flowsheet illustrates in detail the method used by Dow for the manufacture of 2,4-D and its derivatives. A description of the Dow plant is given and reference made to instrumentation, manpower, and safety. A table lists the physical properties of 2,4-D and its isopropyl ester. - J.W.B. [O.R.]

1038. MIKULSKI, J., ECKSTEIN, Z. and URBANSKI, T. Some problems of obtaining weed killers. VI. Notes on the synthesis of 2-aryloxyethylamine and its derivatives. Roczn. Chem., 1958, 32, (3), (Polish.e.)

1039. KARMINSKI, W. Weed-killing agents. Analytical methods. Chemik (Gliwice), 1958, 11, 383-5.
A review. - Chem.Abstr., 53, 9551 e.

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An examination of technological problems connected with the preparation of acrolein in gaseous phase from acetic and formic aldehydes on solid catalysts. It was found that the reaction of acrolein formation on silica gel under optimum conditions occurs with an 81.6% yield in relation to acetic aldehyde, and 70.8% in relation to formic aldehyde. The amount of by-products did not exceed 2%. The reaction of synthesizing acrolein was exothermic (per mole of product about 24 kcal is given out). In addition to silica gel A, diatomaceous earth saturated with sodium hydroxide (0.05 M NaOH for 100 g of carrier) was also used. The yield of acrolein decreased with reaction time on the catalyst. For silica gel A, the yield after 250 hours fell from 45% to 19.6%, and for the diatomaceous earth from 49.2% to 24.1%. - Polish Tech.Abstr., 1959, 6084.

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A discussion of the different types of surface active agents and their functions. - L.K. [O.W.]

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Simazine and atrazine 1 or 2 # did not injure turnip, barley or kidney beans sown 8 weeks later; simazine 1 # applied in June injured sugar beet sown the following May and 2 # injured oats under similar conditions. May plantings of beans, oats, millet, turnips and sugar beet were severely injured on plots treated the previous summer with 4 # simazine, atrazine and ipazine; ipazine and chlorazine [2-chloro-4,6-bis(diethylamino)-s-triazine] had a shorter residual life than simazine or atrazine. 47 days after applying simazine 0.5-20 # to a loam soil 44.8% was recovered, after 96 days 34.9% was recovered and after 1 year only 8.3%. When test plants were sown 1 year after treatment monuron-trichloroacetate 10-30 # had a very marked residual effect - much more than fenuron-trichloroacetate 20 and 30 #, monuron 4 and 6 # or 6 # simazine, atrazine or ipazine.
Barnyard grass [Echinochloa crusgalli] was much more susceptible to dinoseb early post-em. than pre-em. - Partly from Summariser's Report. - L.K. [O.W.]

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Differences in monuron retention by soils was found to be best correlated with an organic soil fraction which was readily oxidized by hydrogen peroxide. Raw organic matter which had not undergone any decomposition by microorganisms did not have the ability to influence monuron effectiveness, suggesting that an organic component, perhaps a product of decomposition, combines with monuron thereby rendering it inactive or unavailable. This component could probably vary with location and produce the variation in effectiveness when monuron is used at low rates for selective weed control. - From Diss.Abstr., 20,3460. - L.K.

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Lead arsenate 419 # was found to be more persistent than chlordane 10 # and to cause significant decreases in yield of peas and beans up to 5 years after application, of carrots after 2 years and of tomatoes after 4 years. Increased concentrations of arsenic in the soil resulted in increased accumulations in the crops; the use of lime did not ameliorate these toxic conditions.
This paper also mentions several other pesticides. - J.W.B. [O.RE.]

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Monuron showed a toxic activity to Stichococcus bacillaris (Näg), a soil alga, at a concentration of $10^{-6}$ when tested in vitro. Addition to the medium of glucose or lactose at 4 p. 1000 lowered the toxicity threshhold. It is suggested that the algistatic properties of monuron might have a secondary influence on the carbon/nitrogen ratio of treated soils. - Authors' Summary (modified). - D.M.L.S. [115(44)]

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1,2,4,5-tetrachlorobenzene (TCB) at rates of 1.7, 5, 15, 45, and 135 # was mixed with the top 2 in. of sand, sandy loam, clay loam and clay soil, in cans in greenhouse experiments. Arivat barley, Palestine oats and Ramono 50 wheat were planted from 1 day to 125 days after soil treatment, and harvested after 18 days in each case. The detrimental effects of TCB were most serious in the sandy soil, and increasing the time interval between soil treatment and planting resulted in less severe effects. With each increase in time following soil treatment, there was a general increase in the seedling heights of barley and oats until the seedlings on plots treated with 135 # showed no injury. - J.W.B. [O.RE.]

See also 947,951,1104.

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Applying barbane in 8 gal/ac at 40 p.s.i. better control of wild oats [Avena fatua] and higher flax yields resulted when a hollow or solid cone nozzle was used than with a fan type. - L.K. [O.W.]

1049. GÖLICH, H. (Univ.,Göttingen, Germany). Elektrostatische Aufladung beim Stäuben und Sprühen. [Electrostatic charging in dusting and low volume spraying.] Dtsch.Agrartech., 1959, 9,(2), 78-82, (G.), figs.13,tabs.1.
Laboratory and field experiments are described in which the effect of charging dusts and low volume sprays (droplet size not >100μ) was investigated. Charging increased the evenness and amount of deposition and resistance to loss by rain or wind. A portable charger fitted to a knapsack sprayer or duster is illustrated and very briefly described. The current is derived from a 6 volt battery similar to a motorcycle battery. - L.K. [217(43)]

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Gives detailed instructions. - D.M.L.S.

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A machine is described and illustrated which lays a polyethylene film over seed-beds and, as it does so, injects methyl bromide into the bed in the form of vapour. It takes half a man-hour to treat a bed 4 x 525 ft, compared with 10 man-hours for manual application. A machine called the "Poly-triever" has been developed to pick up and re-roll the polyethylene cover. - D.M.L.S.

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Gives the results of tests with 31 machines ranging from small atomisers to aircraft mounted sprayers in which aerosols, low volume and high volume sprays were applied to 12 fruit and ornamental crops; the results obtained are illustrated by numerous photographs. A bar attached to the spray lance or boom was found useful for pushing plants over and thus allowing the under surfaces of the leaves to be sprayed. The cover obtained varied with the method of application, machine and crop. - L.K. [O.W.]

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In addition to the materials mentioned in an earlier paper (Weed Abstr., 8,1351) the following dyes have been found to be useful R 1038/20, R 1038/1, Rhodamine 1 part: olein 5 parts, Tinopal PCRP (a light-fast oil soluble dye) and laundry starches + Fluolite C. - L.K. [O.W.]

## PHYSIOLOGY, MORPHOLOGY AND ANATOMY

1054. SUNESON, C.A. and JONES, L.G. (Dep. Agron.,Univ.,Davis,Calif.,U.S.A.) Herbicides may produce instability. Agron.J., 1960, 52 (2), 120-1, figs.3.
In January 1956, dalapon was applied for control of wild oats; barley (var. California Mariout) and wheat (var. Ramona 50) sown in this area in late February showed a high incidence of variously dwarfed plants, polarity-distorted stems, and extreme spike malformations. Harvesting >100 plants of each variety with intermediate malformations showed seed set to be poor. In 1957, the next generation showed the abnormalities in a milder form. In the 1958 generation the previous abnormalities were repeated and some new diversities were observed, including obvious outcrosses in the barley. In the 1959 generation, several variants seemed to have stabilized. It appeared that dalapon acted rather strikingly as both a mutagen and a weak gametocide. - J.W.B. [O.RE.]

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A brief report of a paper and discussion on the

correlation between the herbicidal activity of dipyridylium quaternary salts and their chemical constitution and redox properties. M.E.L. [O.W.]

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Monuron 0.01-100 p.p.m. was found to have no effect on the catalase activity of fresh spirea buds, on the oxidase activity of fresh forsythia flowers or on the peroxidase activity of sweet potato tissue; a peak in the lipase activity of castor beans was observed at 10 p.p.m. Protease activity of Austrian field peas was increasingly inhibited with increasing concentrations > 1 p.p.m.
Wild oats [Avena fatua], Parkland barley and Thatcher wheat were germinated in the dark in aqueous solutions of Avadex [2,3-dichloroallyl diisopropylthiolcarbamate], barbane, and fenac 0.5-200 p.p.m. Avadex and barbane were equally selective for the control of wild oats in wheat, but barbane was much less selective to barley than Avadex. Fenac was more injurious to barley than wild oats, but less to wheat than to wild oats.
Wild oat seed with brown hulls was found to have a much higher % dormancy than grey hulled. When dormant seeds of grey hulled vars. vilis and glabrata and brown hulled vars. intermedia and pilosissima were dehulled and pricked all were found to be viable. In tests over 3 months on a sandy loam and a clay soil where rainfall was 23.3 and 19.6 in. respectively, simazine 10 and 20 # leached 5.5 in. on the sandy loam and 4.5 in. on the clay, whereas atrazine leached 7.25 and 6.25 in. Simazine 20 # reduced Taraxacum officinale by 50% and Plantago lanceolata by 80%, while atrazine 20 # reduced both by 66%. - L.K. [O.W.]

1057. SINGH, J.P. (Indian Agric.Res.Inst., New Delhi, India). The effect of some new growth-regulating compounds on growth of Coleus and tomato seedlings. Indian J.Hort., 1957, 14, 145-50.
Vine growth of tomato plants was stimulated by spraying the plants with 1000 p.p.m. 1-naphthoic acid and inhibited by 10 000 p.p.m. 6-quinolinecarboxylic acid or 1-hydroxy-2-naphthoic acid. Coleus and tomato plants sprayed with 1000-10 000 p.p.m. 1,4-naphthalenediol were seriously injured; plants were killed at higher concentrations. Soil application with 25 p.p.m. 4-(p-ethoxyphenylazo)-m-naphthalenediamine significantly increased the fresh weight of tomato vines, but 25 and 100 p.p.m. 1-amino-4-hydroxyanthraquinone, 1-amino-2-naphthol-4-sulphonic acid, resorcinol, diethyldithiocarbamic acid, 2,4-dihydroxyacetophenone, 4-(p-nitrophenylazo)resorcinol, p,p'-methylenebis(N,N-dimethylaniline), diphenylglyoxime, and 2,2,4,4,6,6,-hexanitrodiphenylamine were ineffective. Chem.Abstr., 53, 9552e.

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Reports studies on the translocation and metabolism of amitrol. Amitrol appeared to combine with glycine and serine (or a common derivative thereof) to form a complex, from which amitrol was regenerated by hydrolysis with hydrochloric acid. - From Diss.Abstr., 20, 3483. - L.K.

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Includes reference to hitherto unpublished work in which NPA was found to interfere with the lateral and polar transport of auxin rather than by blocking the action of auxin at cell level. - L.K. [412(42)]

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The compound was applied to all branches, fruits and leaves when the kernels were hardening. $C^{14}$ was determined in the mesocarp 3 days after treatment, and in the embryos and internal integuments between the third and tenth day after treatment. Its activity diminished as the fruit ripened. The greatest activity was in the internal integuments. Paper

chromatography showed that at least a part of $C^{14}$ was still in the intact molecule of 2,4,5-T. Quantitative measurements showed a distinct accumulation of $C^{14}$ in the internal integuments as the season advanced. It was clear that 2,4,5-T is absorbed simultaneously by the leaves and the fruit. The addition of a surface active agent increased considerably the activity of $C^{14}$ in the fruit tissues. The fresh and dry weight and carbon content of the internal integuments diminished as the fruit grew in size. - From Fruits, 15,(2),56,10719. - D.M.L.S.

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## MISCELLANEOUS

See also 1087.

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1106. NETHERLANDS. Agricultural chemicals for aerial spraying. Agric.Aviation, 1960, 2,(2),55-64.
A table lists the trade names used by various chemical companies for various pesticides including mecoprop, 2,4-D, dalapon, diuron, MCPA, monuron, 2,4,5-T and several combinations. In addition the % a.i. or application rate, and formulation particulars are listed for each compound. - J.W.B. [O.RE.]

1107. * MICHIELS, A. La cyanamide calcique et la protection des plantes. [Calcium cyanamide and plant protection.] Rev.Agric., 1959, 12,(7-8),697-701.
As herbicide and general pesticide.

1108. FOX, W.B. New herbicides. Res. Rep.W.Sect.Nat.Weed Comm.Canada, 1959, 117-8.
Very brief notes on the results obtained with 18 new herbicides compiled from the Research Report. - L.K. [O.W.]

1109. STANKOVIC, A., OSTOJIC, J. and MISIC, M. Pesticidi - kratak pregled svojstava i primene u poljoprivredi. [Pesticides - a short review of their properties and use in agriculture.] Hemizacija poljoprivrede, 1960, (29/31), pp.202.
p.78-100. Gives brief notes on commercially available herbicides including commercial preparations available in Yugoslavia.
p.104-149. Consists of a table of some chemical and physical properties of pesticides (including herbicides).
p.194. Lists the 11 Yugoslav manufacturers of pesticides. - L.K. [O.W.]

1110. REGAN, A. Plant protection preparations. Kem.u Industr.,Zagreb, 1959, 8,193-206, bibl.89.
An extensive review of insecticides, rodenticides, fungicides, herbicides and other plant-protection preparations used in Yugoslavia is presented. The chemical composition and the properties are stated for all compounds and application methods and analytical data are quoted for several.- J.W.B.

### Noted

1111N. EVANS, T.H. New herbicides. Res.Rep.E.Sect.Nat.Weed Comm.Canada, 1959, 146-8.
Summarises the results with new herbicides presented throughout the Research Report. - L.K. [O.W.]

### ERRATUM

Weed Abstr., 9, 919.

Line 20 - for $3-10^{-6}$mm read $3 \times 10^{-6}$ mm.

## List of Common Names and Chemical Abbreviations

Revised April, 1960.

The following list, based on that adopted by the Weed Society of America has been approved by the British Weed Control Council, except those marked □.
An asterisk (*) signifies common names approved by the B.S.I.
A plus sign (+) signifies approval by the Weed Society of America.

| | |
|---|---|
| amiben □+ | 3-amino-2,5-dichlorobenzoic acid |
| amitrol +□ | 3-amino-1,2,4-triazole. |
| AMS □+ | ammonium sulphamate |
| atrazine □+ | 2-chloro-4-isopropylamino-6-ethylamino-1,3,5-triazine |
| barbane □+ | 4-chloro-2-butynyl-N-(3-chlorophenyl)carbamate |
| CDAA + | 2-chloro-N,N-diallylacetamide |
| CDEA + | 2-chloro-N,N-diethylacetamide |
| CDEC + | 2-chloroallyldiethyldithiocarbamate |
| chlorpropham * | isopropyl-N-(3-chlorophenyl)carbamate |
| 4-CPA + | 4-chlorophenoxyacetic acid |
| 4-CPB | 4-(4-chlorophenoxy)butyric acid |
| 2,4-D +* | 2,4-dichlorophenoxyacetic acid |
| 3,4-DA + | 3,4-dichlorophenoxyacetic acid |
| dalapon +* | 2,2-dichloropropionic acid |
| 2,4-DB * | 4-(2,4-dichlorophenoxy)butyric acid |
| DCU +□ | dichloralurea |
| 2,4-DEB + | 2,4-dichlorophenoxyethyl benzoate |
| 2,4-DES +* | sodium 2,4-dichlorophenoxyethyl sulphate |
| dichlone +* | 2,3-dichloro-1,4-naphthaquinone |
| dinosam * | 2-s-amyl-4,6-dinitrophenol |
| dinoseb * | 2-s-butyl-4,6-dinitrophenol |
| diquat + | 1,1'-ethylene-2,2'-dipyridylium dibromide |
| diuron + | N-(3,4-dichlorophenyl)-N',N'-dimethylurea |
| DMTT +□ | 3,5-dimethyltetrahydro-1,3,5,2H-thiadiazine-2-thione |
| DNOC * | 2-methyl-4,6-dinitrophenol or 3,5-dinitro-o-cresol |
| 2,4-DP | 2-(2,4-dichlorophenoxy)propionic acid |
| endothal + | 3,6-endoxohexahydrophthalic acid |
| EPTC +□ | ethyl-N,N-dipropylthiolcarbamate |
| erbon + | 2-(2,4,5-trichlorophenoxy)ethyl-2,2-dichloropropionate |
| fenac □ + | 2,3,6-trichlorophenylacetic acid |
| fenuron + | N-(phenyl)-N',N'-dimethylurea |
| ipazine □+ | 2-chloro-4-diethylamino-6-isopropylamino-1,3,5-triazine |
| MCPA +* | 4-chloro-2-methylphenoxyacetic acid |
| MCPB * | 4-(4-chloro-2-methylphenoxy)butyric acid |
| MCPES + | sodium 4-chloro-2-methylphenoxyethyl sulphate |
| mecoprop * | dl-2-(4-chloro-2-methylphenoxy)propionic acid |
| MH +□ | maleic hydrazide |
| monuron +* | N-(4-chlorophenyl)-N',N'-dimethylurea |
| neburon + | N-(3,4-dichlorophenyl)-N'-butyl-N'-methylurea |
| NPA + | N-1-naphthylphthalamic acid |
| PCP + | pentachlorophenol |
| PMA + | phenyl mercuric acetate |
| propazine □+ | 2-chloro-4,6-bis(isopropylamino)-1,3,5-triazine |
| propham * | isopropyl-N-phenylcarbamate |
| simazine+ | 2-chloro-4,6-bis(ethylamino)-1,3,5-triazine |
| SMDC +□ | sodium methyl dithiocarbamate |
| 2,4,5-T +* | 2,4,5-trichlorophenoxyacetic acid |
| 2,4,5-TB | 4-(2,4,5-trichlorophenoxy)butyric acid |
| 2,3,6-TBA + | 2,3,6-trichlorobenzoic acid |
| TCA + | trichloroacetic acid |
| 2,4,5-TES + | sodium 2,4,5-trichlorophenoxyethyl sulphate |
| 2,4,5-TP | 2-(2,4,5-trichlorophenoxy)propionic acid |
| trietazine □+ | 2-chloro-4-diethylamino-6-ethylamino-1,3,5-triazine |
| 3Y9 □ | tris-(2,4-dichlorophenoxyethyl)phosphite |

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